Service Manual

MODEL

RD-711

GENERAL DESCRIPTION

The Model RD-711 is a four-track; three-speed stereo tape recorder that operates in a vertical and horizontal position. It incorporates solid state electronic circuitry and will operate on a conventional (120 volts, 60 cycles) (240, 220, 200, 110 volts, 50/60 cycles) power outlet.

Jacks are provided for connecting an external speaker, external amplifier and for recording directly from an external source, such as radio or phonograph.

The right and left channels are independent, making it possible to record on one channel while playing back the other.

HAYAKAWA ELECTRIC CO., LTD.
OSAKA, JAPAN

SPECIFICATIONS

Type :	Solid — State Amplifier, Wooden Leatherette Cabinet, 7″ Reel Capacity, Vertical/Horizontal Operation, 4-Track Stereo Tape Recorder
Power Source :	AC 120 V, 60/s, AC 240, 220, 200, 110V, 50/60/s
Power Consumption:	40W
Tape Speed :	7 1/2″ ips (19 cm/sec), 3 3/4″ ips (9.5 cm/sec) and 1 7/8″ ips (4.8 cm/sec)
Recording Track :	4-Track, 2-Channel
Recording System :	AC Bias (85K /s)
Erasing System :	AC Erase (85K /s)
Recording Time :	4-Track Stereo, 60 minutes at 7 1/2″ ips (19 cm/sec) 4-Track Monaural, 120 minutes at 7 1/2″ ips (19 cm/sec) with (1200 ft, 370m Tape)
Rewind Time :	Within 2 minutes (1200 ft, 370m Tape)
Fast Forward Time :	Within 2 minutes (1200 ft, 370m Tape)
Power Output :	Maximum 2.8 W×2 Undistorted 1.9 W×2
Tape Heads :	Stereo 1/4 Track Record/Playback×1 Stereo 1/4 Track Erase ×1
Speakers :	Two 7 1/2″×4″ (19cm×10cm) P.M. 8 ohm
Transistors :	2SB-73×2, 2SB-75×6, 2SB-370×4, 2SB-156×2
Input Circuit :	Microphone Input, 200 ohm Auxiliary Input, 500 K ohm
Output Circuit :	External Amplifier, 2 K ohm External Speaker, 8 ohm
Monitoring :	Built-in Speaker Sound Monitoring System
Recording Level Indicator :	VU Meter
Microphone :	Bar Type Dynamic Microphone, 200 ohm
Dimensions :	24 3/4″ (W)×15 3/8″(H)×7 1/8″(D) 63 cm (W)×39 cm(H)×18 cm (D)
Weight :	33 lbs. (15 kgrs.)

DESIGNATION OF PARTS

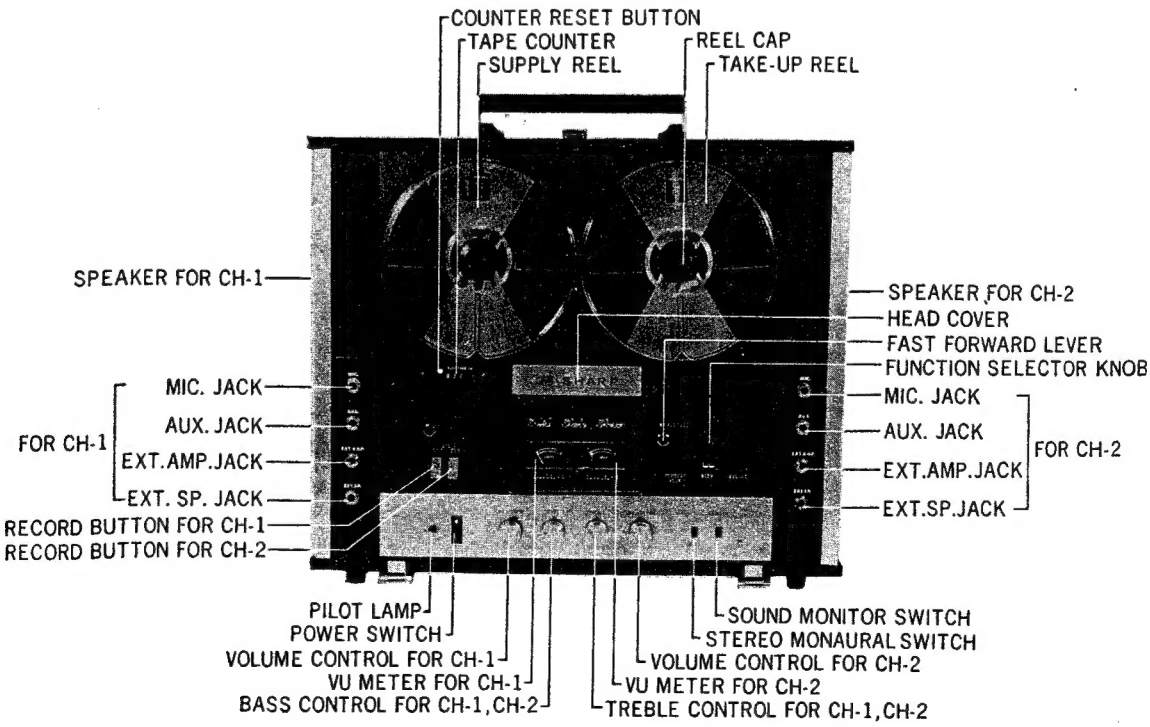


Figure 1

FUNCTION OF CONTROLS

FUNCTION SELECTOR CONTROL (Refer to Figure 2, Figure 3)

The function selector is used to actuate or stop the movement of the tape and select the direction of its movement. The five operating modes are as follows.

(1) FORWARD PLAY (Refer to Figure 4)

Set the FUNCTION SELECTOR KNOB (87) in the FORWARD PLAY position.

1. The FUNCTION SELECTOR CAM PLATE (93) rotates so that the ROD (187) actuates the BRAKE LEVER (44) and the BRAKE PAD (29) are disengaged from the TAKE-UP REEL SPINDLE (35).
2. Movement of the ROD (187) is transmitted to the TENSION ROLLER LEVER (38) so that the TENSION ROLLER (34) is pressed against the CLOTH BELT (33), the rotation of the MOTOR PULLEY (32) is transmitted to the TAKE-UP REEL SPINDLE (35) and the TAKE-UP REEL SPINDLE takes up the tape.
3. The IDLER LEVER (59) moves in the direction of the arrow cooperating the CAM PLATE (193) so that the IDLER (56) is engaged with the MOTOR PULLEY (32) and the FLY-WHEEL (121), driving the FLY-WHEEL (56) and CAPSTAN (121).
4. The FUNCTION SELECTOR CAM PLATE (93) moves the PINCH ROLLER LEVER (47) so that the PINCH ROLLER (52) is pressed firmly against the CAPSTAN SHAFT (121) driving the tape.
5. The TAPE PAD PLATES (103) (104) press the tape firmly against the TAPE HEADS (81) and (82) by the movement of the PINCH ROLLER LEVER (47).

(2) RECORD (Refer to Figure 4)

In order to operate this recorder in the RECORD mode, the RECORD BUTTON (155) must be depressed before the FUNCTION SELECTOR KNOB (87) is set to FORWARD PLAY position. This action causes the RECORD BUTTON to be locked in depressed position thus activating the RECORD circuits of the PRINTED CIRCUIT BOARD ASSEMBLY (227) so that erase current is applied to the ERASE HEAD (81), record bias is applied to the RECORD/PLAYBACK HEAD (82), and the output of the record circuit is applied to the LEVEL METERS (M1) and (M2) for monitoring purpose.

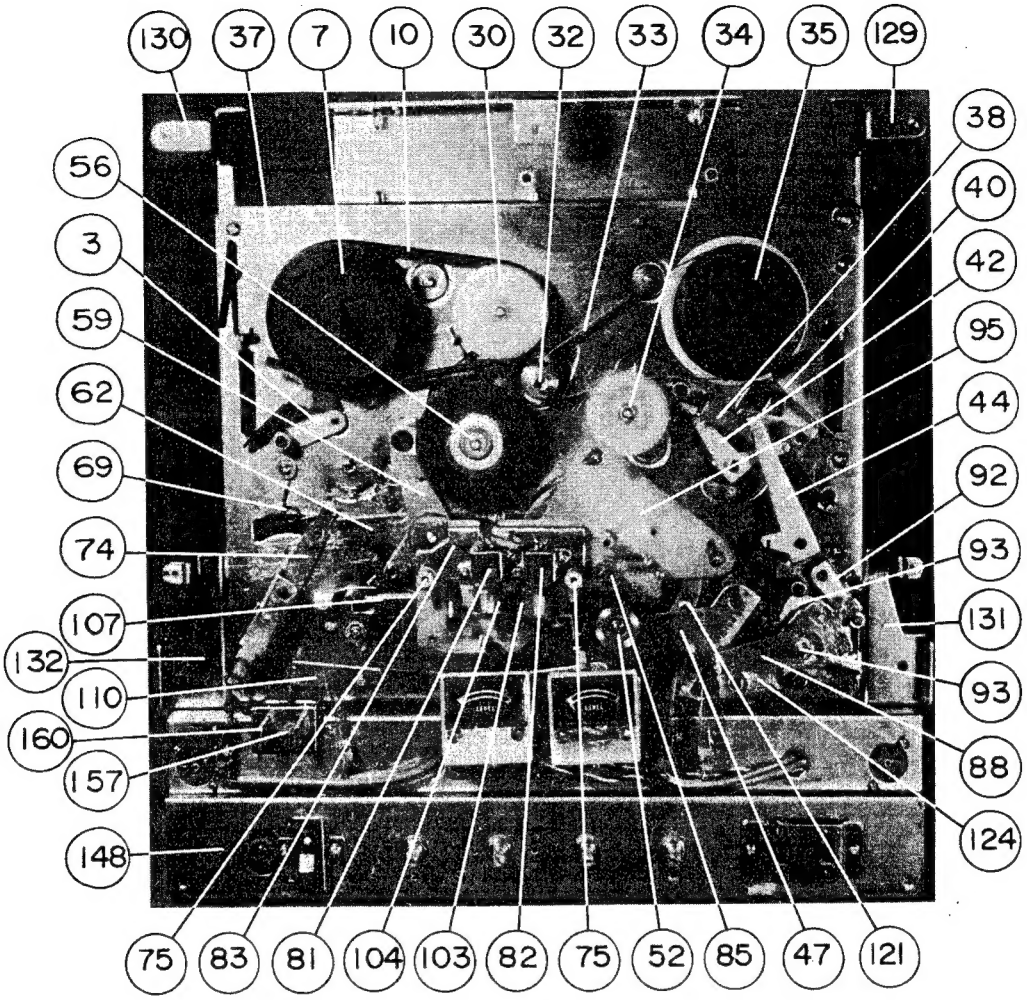


Figure 2

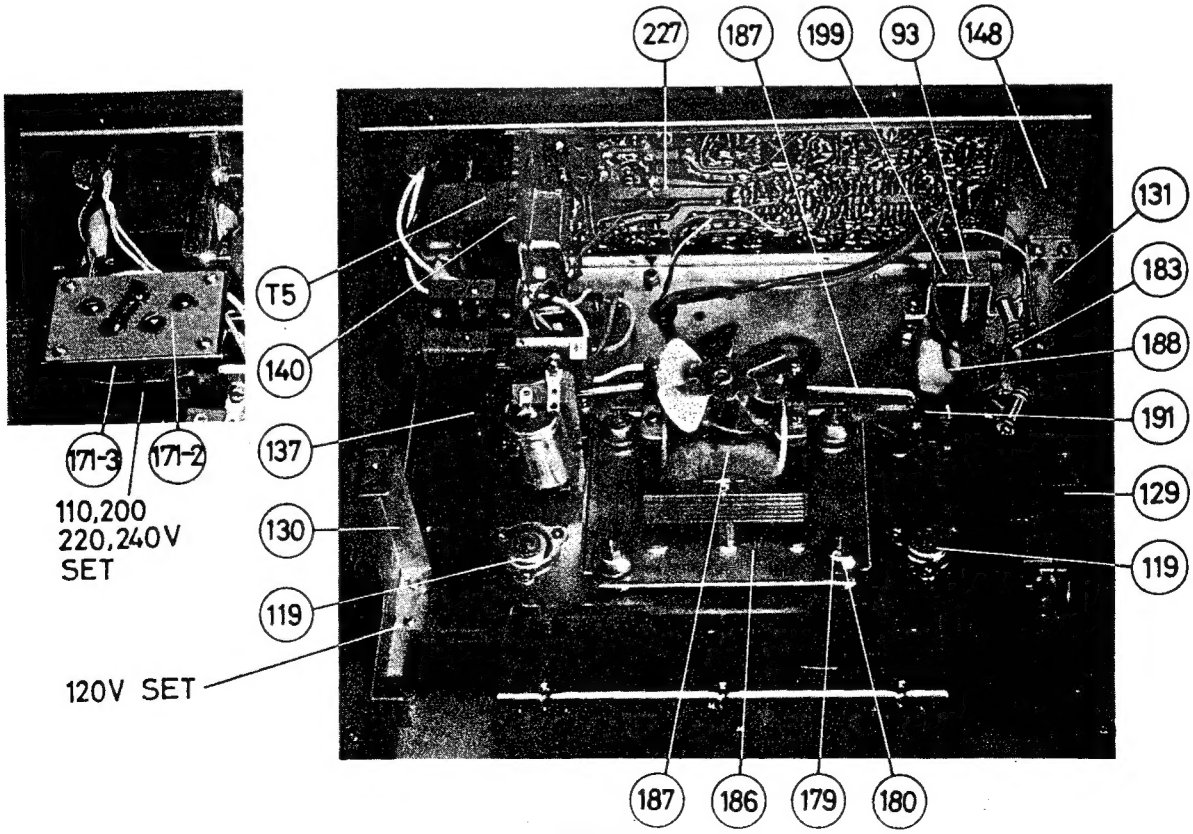


Figure 3

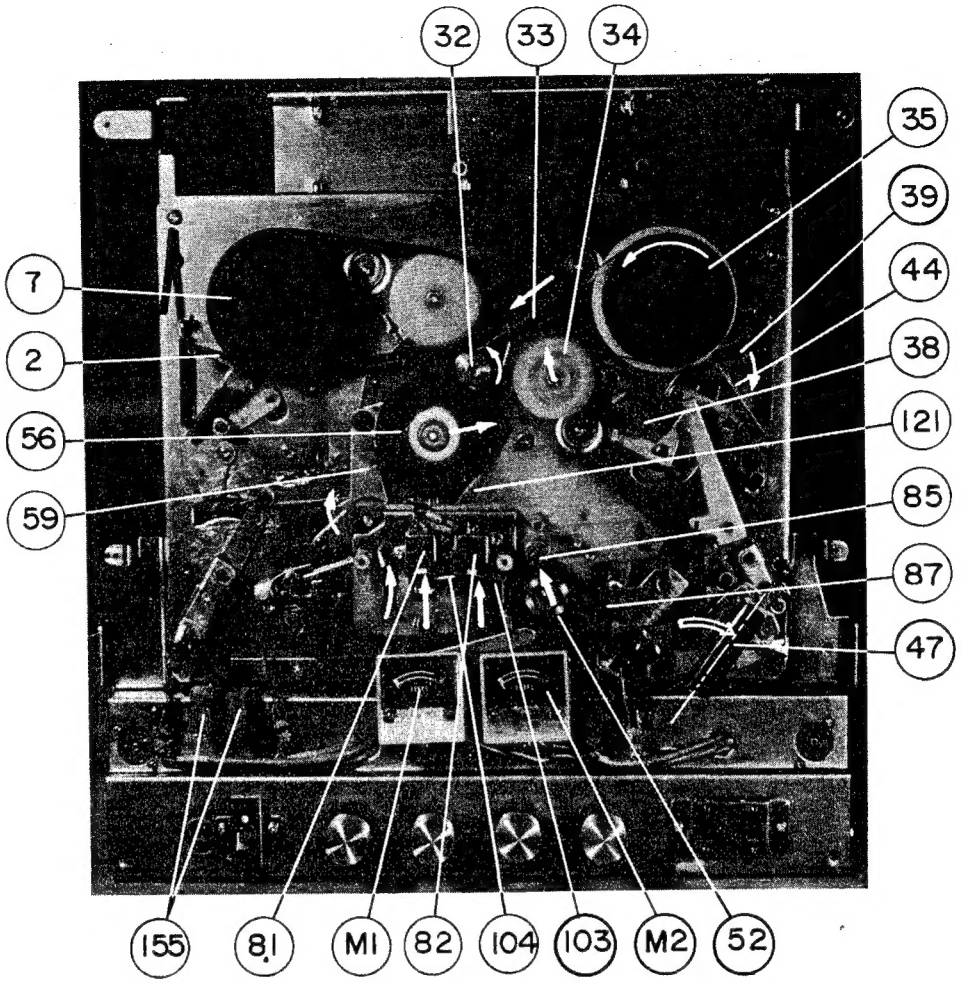


Figure 4

(3) STOP (Refer to Figure 5)

With the FUNCTION SELECTOR KNOB (87) set in this position, the BRAKE PADS (2) and (39) are pressed against the REEL SPINDLES (7) and (35), but all other mechanical functions are at idle.

(4) REWIND (Refer to Figure 6)

When the FUNCTION SELECTOR KNOB (87) is set in this position, FUNCTION CAM PLATE (93), CAM PLATES (191) (193) and RODS (187) (188) move in the reverse direction of the FORWARD PLAY position. The BRAKE LEVERS (3) and (40) are disengaged from the REEL SPINDLES (7) and (35), and the REWIND PULLEY (30) is pressed against the MOTOR PULLEY (32) so that the rotation of the MOTOR PULLEY (32) is transmitted to the SUPPLY REEL SPINDE (7) through the RUBBER BELT (10) causing the SUPPLY REEL SPINDLE (7) to be driven in a clockwise direction.

Note that in this operating position, the TENSION ROLLER (34) does not engage the CLOTH BELT (33), the TAPE PAD PLATE (103) (104) and the PINCH ROLLER (52) do not engage the tape, but IDLER (56) and FLY WHEEL (121) are rotating.

(5) FAST FORWARD (Refer to Figure 7)

To increase the speed at which the tape is wound up on the TAKE-UP REEL, a FAST FORWARD CONTROL has been provided. This control may be used only when the FUNCTION SELECTOR KNOB (87) is set in the FORWARD PLAY position.

When the FAST FORWARD KNOB (66) is pushed as far to the upward as possible, the FAST FORWARD LEVER (88) is locked into position, the TENSION ROLLER (34) applies greater tension to the CLOTH BELT (33), the TAPE PAD PLATES (103) (104) and the PINCH ROLLER (52) are disengaged from contact with the tape. In order to discontinue FAST FORWARD operation, the FUNCTION SELECTOR KNOB (87) must be reset to STOP position.

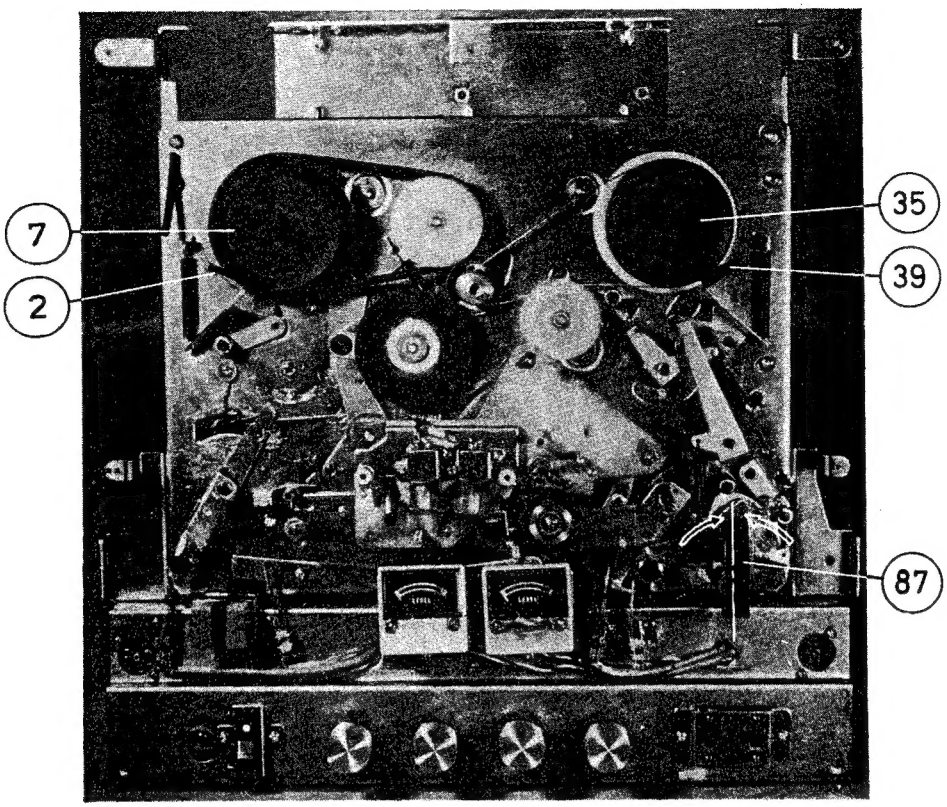


Figure 5

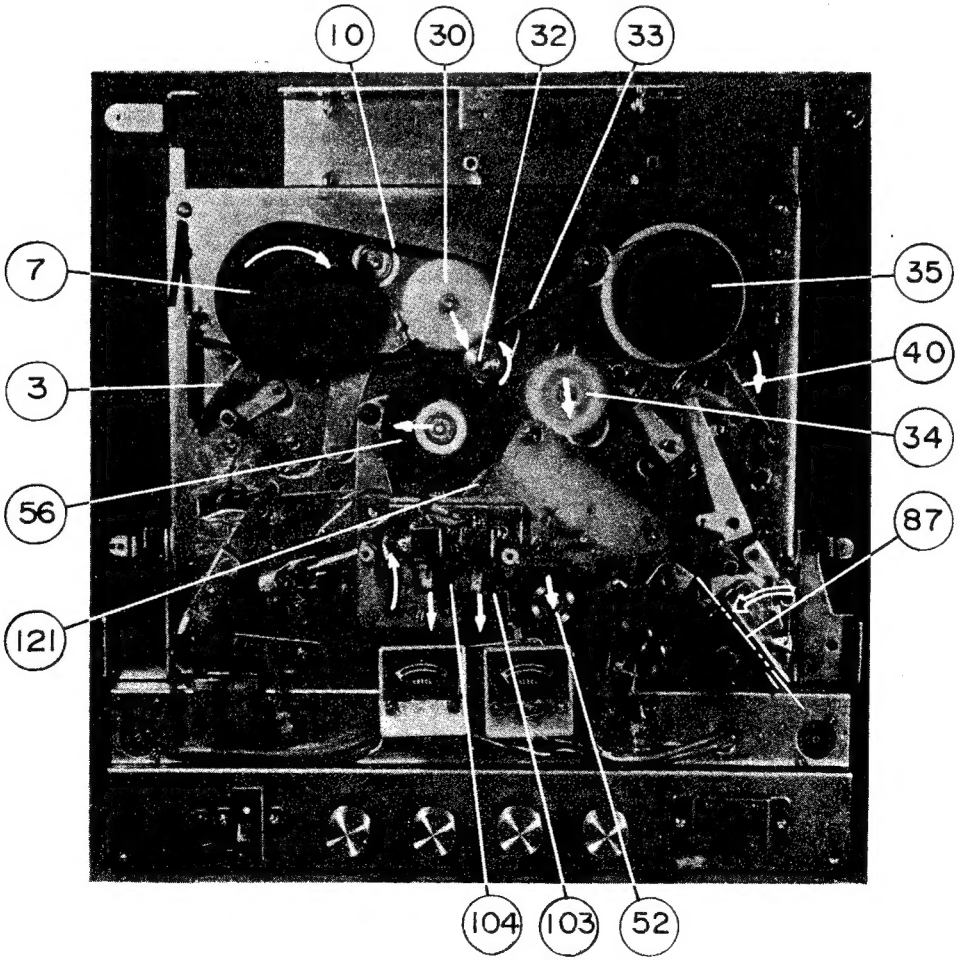


Figure 6

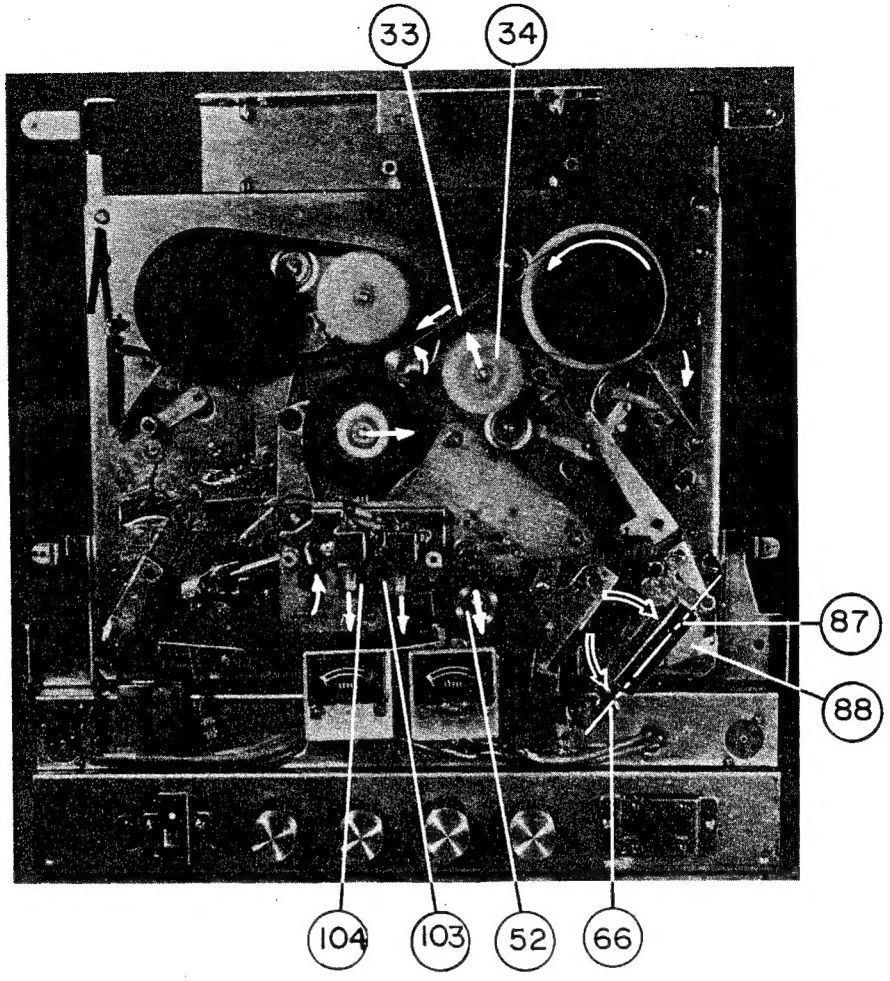


Figure 7

FUNCTION OF LEVER SWITCHES (Refer to Figure 8 and Schematic Diagram)

(1) The LEVER SWITCH (SW4) operates as a muting switch so that the speaker doesn't sound in the REWIND, FAST FORWARD, and STOP modes.

(2) The LEVER SWITCH (SW3) operates as a record safety switch. Power is supplied to the oscillating circuit in the FORWARD mode only and prevents the tape from being erased in the REWIND, and FAST FORWARD mode.

(3) The LEVER SWITCH (SW5) operates as a record equalizer switch. The switch turns off when the set is put in the 7 1/2 ips (19cm/sec) speed operation and turns on when the set is put in the 3 3/4 (9.5cm/sec), 1 7/8 (4.8 cm/sec) ips operation.
The record equalizer circuit is changed according to the tape speed in each case.

(4) The LEVER SWITCH (SW6) operates as a playback equalizer switch. When the recorder is set in the 7 1/2 ips tape speed operation, the switch turns on, in the 3 3/4, 1 7/8 ips operation turns off. The playback equalizer circuit is changed according to the tape speed in each case.

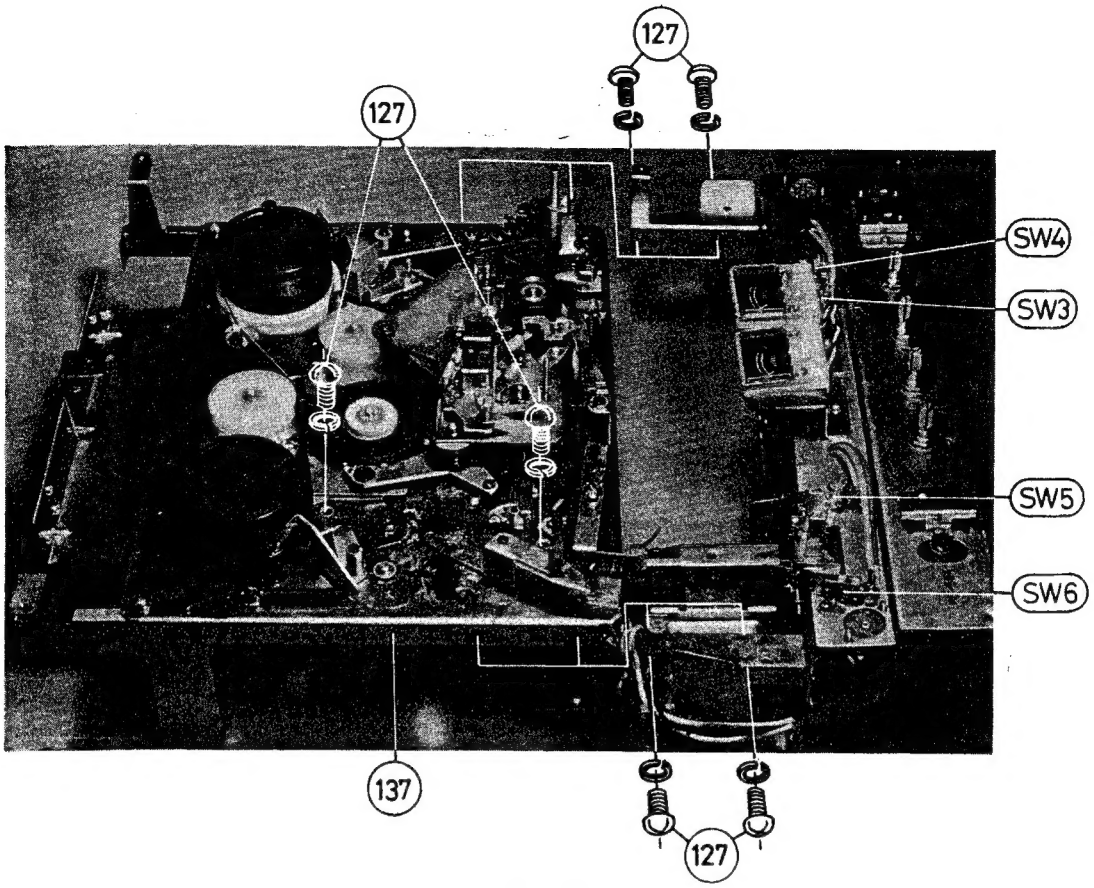


Figure 8

DISASSEMBLY PROCEDURE

MECHANISM ASSEMBLY REMOVAL (Refer to Figure 9)

1. Remove the VOLUME CONTROL KNOB (144), and the TONE CONTROL KNOB (144).
2. Remove the FAST FORWARD KNOB (66) and the SPEED SELECTOR KNOB (66).
3. Remove the FUNCTION SELECTOR KNOB (87), loosening the SET SCREW (86).
4. Remove the HEAD COVER (228).
5. Remove the 5 SCREWS (220) retaining the REEL PANEL (215).
6. Remove the 2 SCREWS (218) retaining the DECK COVER (214).
7. Remove the REEL PANEL (215) and the DECK COVER (214).

   Caution : Remove the COUNTER BELT (15) on the TAPE COUNTER (16) provided on back of the REEL PANEL, when removing the REEL PANEL and the DECK COVER.
8. Disconnect the SPEAKER (SP1) (SP2) lead tips.
9. Unplug the CONNECTOR PLUGS (PL1) and (PL2).
10. Remove the 2 SCREWS (127) retaining the MECHANISM CHASSIS (137) on the CABINET (204).
11. Remove the 2 SCREWS (219) retaining the HANDLE (207).
12. Remove the 4 SCREWS (233) on the bottom of the CABINET (204) retaining the CABINET to the MECHANISM CHASSIS (137).

Then the mechanism assembly can be removed from the cabinet.

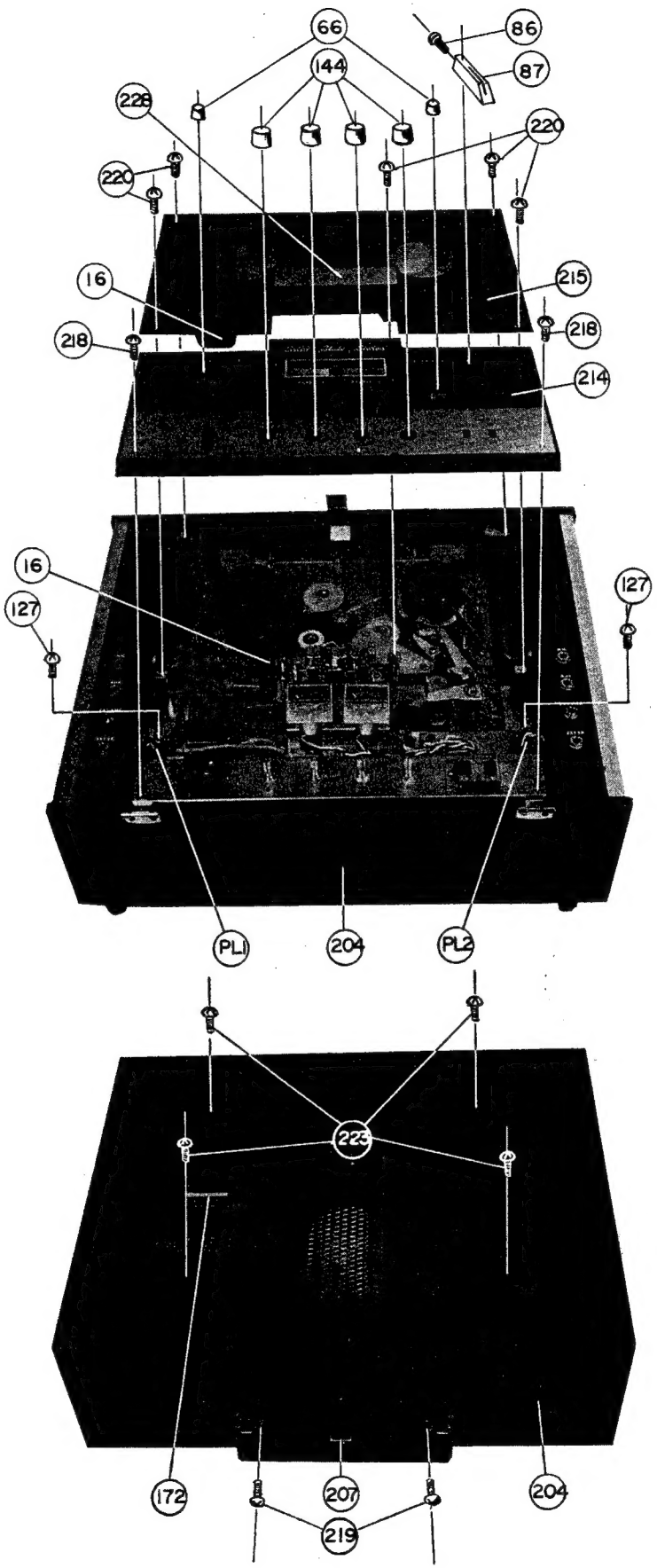

66
86
144
87
228
220
220
16
215
218
218
214
16
127
127
PL1
204
PL2
223
172
207
204
219

Figure 9

AMPLIFIER CHASSIS ASSEMBLY REMOVAL (Refer to Figure 8, Figure 10)

When the mechanism chassis assembly is removed from the cabinet, the PRINTED CIRCUIT BOARD ASSEMBLY (227) is accessible for servicing. But when removing the amplifier assembly, follow the next procedure, if necessary.

1. Disconnect the HEADS LEADS (1) and (2), the AUTOMATIC SHUT-OFF SWITCH (SW8) LEADS (3), and the MOTOR LEADS (4). (Refer to Figure 10)
2. Remove the 2 SCREWS (127) on the MECHANISM CHASSIS (137). (Refer to Figure 8)
3. Remove the 4 SCREWS (127) both sides of the MECHANISM CHASSIS (137).

Caution: When removing the amplifier assembly, take care not to damage the LEVER SWITCHES (SW3, SW4, SW5, SW6).

HEAD ASSEMBLY REMOVAL (Refer to Figure 11, 14)

Remove the SCREW (78), then the HEAD ASSEMBLY can be removed. Disconnect the head leads, if necessary.

FLY-WHEEL ASSEMBLY REMOVAL (Refer to Figure 12)

1. Set the tape recorder to STOP position.
2. Remove the SPRING (113).
3. Remove the 3 SCREWS (94) and the SCREW (49).

Then the SUB CHASSIS (95) can be removed along with the HEAD ASSEMBLY and the FLY-WHEEL (121). Disconnet the head leads, if necessary.

Caution: When removing the FLY-WHEEL ASSEMELY, take care not to lose the BALL BEARING (122) and damage the AUTOMATIC SHUT-OFF SWITCH LEVER (107).

MOTOR ASSEMBLY REMOVAL (Refer to Figure 3)

Remove the 4 SPECIAL SCREWS (179), then the MOTOR ASSEMBLY can be removed.

MOTOR PULLEY REMOVAL (Refer to Figure 13)

Loosen the 2 SET SCREWS (31) mounted on the MOTOR PULLEY (32) with 3 mm hex-wrench.

The Motor pulley should be changed according to the power source cycles. Index number on the motor pulley shows the power source cycles.

(Refer to the article of POWER SOURCE CYCLES CHANGING.)

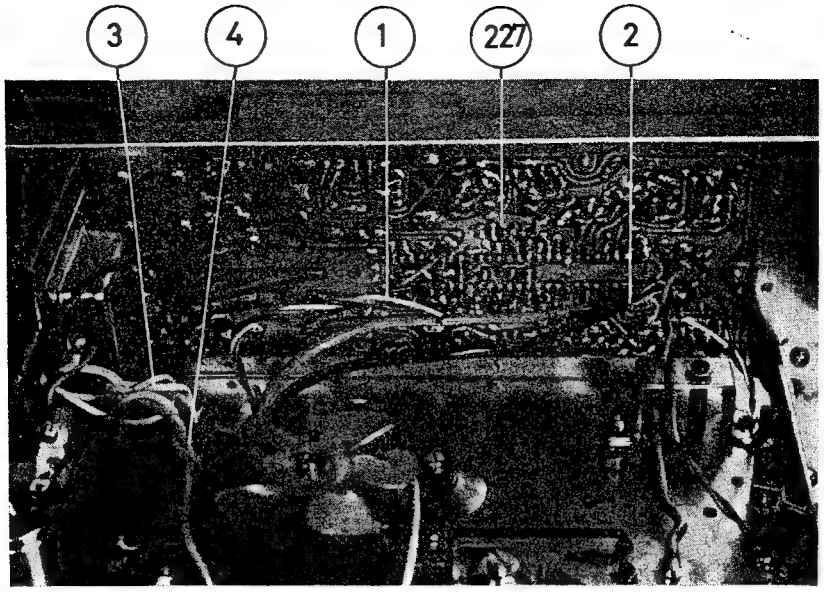


Figure 10

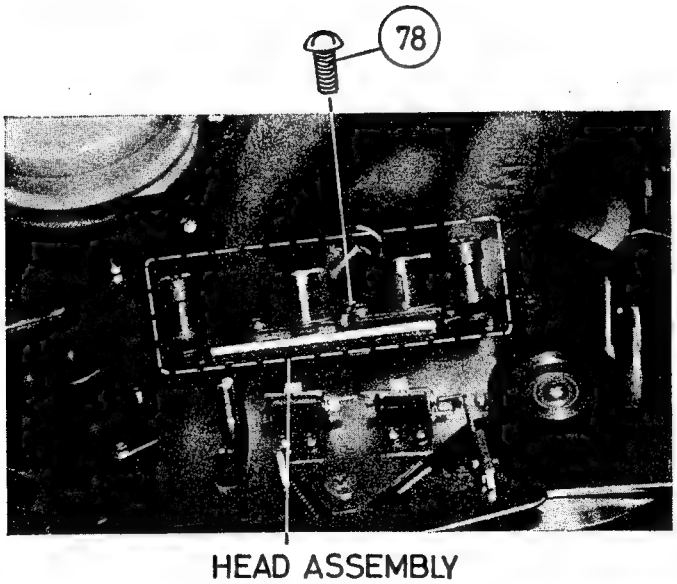


Figure 11

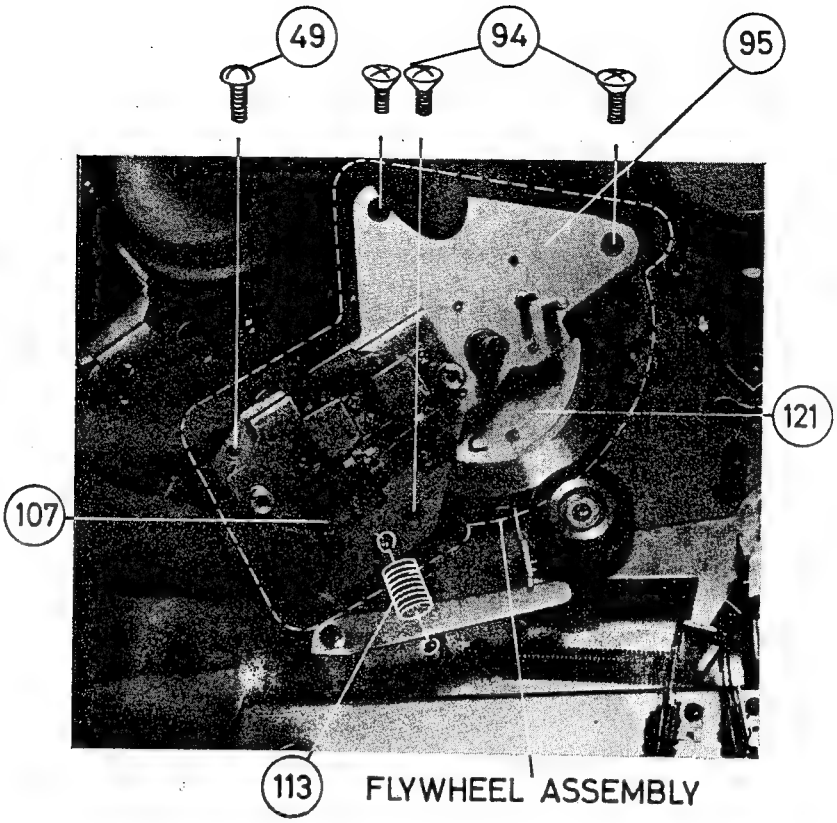
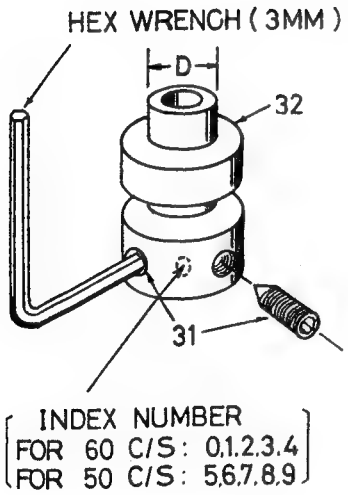


Figure 12



MARK for 60 c/s			MARK for 50 c/s.	
No.	SIZE of D	TAPE SPEED	SIZE of D	No.
0	7.86 mm	Slower	9.43 mm	5
1	7.96	↑	9.55	6
2	8.12	↓	9.75	7
3	8.28		9.95	8
4	8.44	Faster	10.13	9

Figure 13

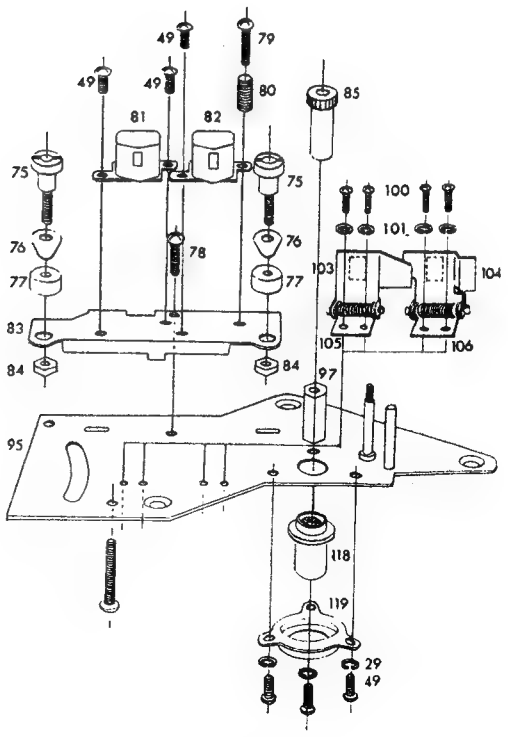


Figure 14

MECHANISM ADJUSTMENT

RECORD/PLAYBACK HEAD (82) (Refer to Figure 14)

1. With the recorder in operating condition, thread standard test tape on recorder and operate in PLAYBACK mode.
2. ADJUST the SCREW (49) of the RECORD/PLAYBACK HEAD (82) to obtain maximum output and best reproduction of high frequencies using the azimuth alignment tape.

HEADS (81) (82) HEIGHT (Refer to Figure 11 and Figure 14)

1. Remove the HEAD ASSEMBLY removing the SCREW (78).
2. Loosen the CLUMP NUTS (84) on the back of the HEAD MOUNT (83) so that the TAPE GUIDES (75) can be adjusted.
3. Reassemble the HEAD ASSEMBLY fixing the SCREW (78).
4. Thread a quater-track test tape.
5. Operate the recorder in the FORWARD PLAY mode with the VOLUME CONTROLS set on maximum, and adjust the TAPE GUIDE (right) (75) for maximum output from the tape.
6. Next, operate the recorder in the RECORD mode with the VOLUME CONTROLS set on minimum and signal source disconnected from the recorder using other tape and erase the tape.
7. If the tape is not completely erased, adjust the TAPE GUIDE (75) (left).
8. After complete alignment is attained, tighten the CLUMP NUTS (84) removing the HEAD ASSEMBLY and then fix it on the original position.

TAPE PADS (Refer to Figure 14)

While using a standard test tape and operating the recorder in PLAYBACK mode, loosen the TAPE PAD ASSEMBLY RETAINING SCREWS (100) and position the BRACKET (106) (R/P Head) to obtain maximum output.
While using an other recorded tape and operating the recorder in RECORD mode and position the BRACKET (106) (Erase Head) to obtain complete erase.
When proper positioning is obtained, tighten down the retaining screw (100).

SHUT-OFF SWITCH (SW8) (Refer to Figure 15)

Loosen the two SCREWS [201(A), (B)].
Set the recorder in FORWARD PLAY mode and position the SHUT-OFF SWITCH (SW8) rotating it around the SCREW 201 (A), checking to see that power is supplied to the recorder while tape is running and switched off while tape is out.
Fasten the SCREWS (201) after proper timing is attained.

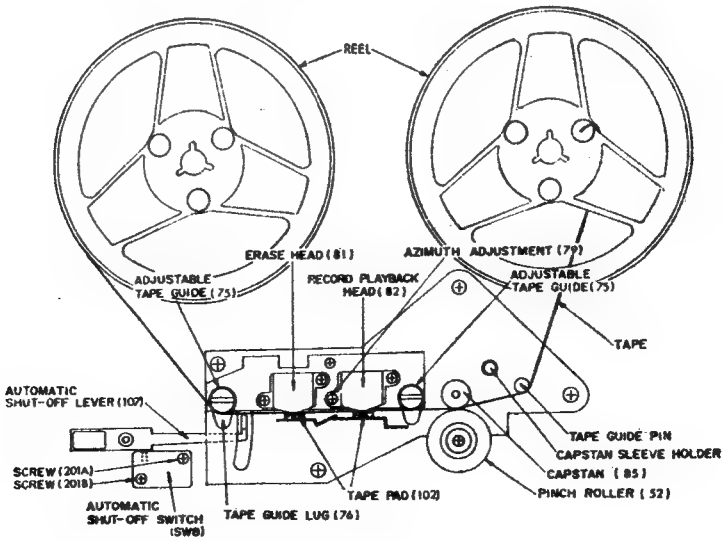


Figure 15

MISCELLANEOUS OPERATING SPECIFICATIONS (Refer to Figure 16)

1. When operating at tape speed of 7½ ips (19 cm/sec),the pinch roller tension should be between 900 and 1000 grams.
2. When operating in PLAYBACK mode, take-up torque should be between 25 and 50 grams.
3. When operating in FAST FORWARD mode, take-up torque should be between 90 and 130 grams.
4. When operating in REWIND mode, take-up torque should be between 90 and 110 grams.
5. Tape pad pressure should be maintained between 20 and 30 grams.
   (Refer to Fig. 16 for proper method of measuring torque)

ELECTRICAL MEASUREMENTS

PLAYBACK AMPLIFIER SENSITIVITY (Refer to Schematic Diagram)

1. Set the recorder in STEREO PLAYBACR mode with the VOLUME CONTROLS in maximum.
2. Set a 8 ohm dummy resistor (2W, 5%) across the EXTERNAL SPEAKER jacks (J4, J8) of the both channels.
3. Connect the Sine Wave Generator for 1000 cps,-68dB (=0.4mV), OdB=1V across the CH-1 and CH-2 terminals of the RECORD PLAYBACK HEAD (82).
4. Connect an AC VTVM across the 8 ohm dummy resistor of the CH-1 EXT. SP jack (J4). If the playback amplifier sensitivity is normal, the leading on the VTVM should be approximately 2.4 V.
5. Adjust the VARIABLE RESISTOR (R98) so that the output of the 8 ohm dummy resistor of CH-2 becomes equal to the output of the 8 ohm resistor of CH-1.

RECORD AMPLIFIER SENSITIVITY (Refer to Figure 17 and Schematic Diagram)

1. Set the recorder in STEREO RECORDING mode with the VOLUME CONTROLS in maximum.
2. Put some insulator (paper, etc.) between the contacting leaves of the RECORD SAFETY LEVER SWITCH (SW3) to stop the BIAS OSCILLATION.
3. Unsolder the ground wire connection at the RECORD/PLAYBACK HEAD (82) (on the schematic diagram, this connection is designated as TP1, TP2) and insert a 100 ohm resistor (1/2W, 5%) between the open connection on the tape head and the open end of the wire that was removed.
4. Connect the Sine Wave Generator for 1000 cps, -78dB (0.13 mV),
   Odb=1V across the MICROPHONE jacks (J1, J5).
5. Connect an AC VTVM across the 100 ohm resistor. If the record amplifier sensitivity is normal, the reading of the VTVM should be approximately 3.6 mV.
6. In this condition, adjust the VARIABLE RESISTOR (R96, R97) so that the needle of the VU METERS (M1) and (M2) point the proper position on the scale. (Between the white and red area)

RECORD BIAS (Refer to Figure 17)

1. Set the recorder in STEREO RECORDING mode with the VOLUME CONTROLS in minimum.
2. Insert a 100 ohm resistor (1/2W, 5%) in the ground lead of the RECORD/PLAYBACK HEAD (82).
3. Connect an AC VTVM across the 100 ohm resistor.
5. Adjust the TRIMMER CONDENSER (C61: CH-1, C62: CH-2) so that the reading on the VTVM should be approximately 85 mV.

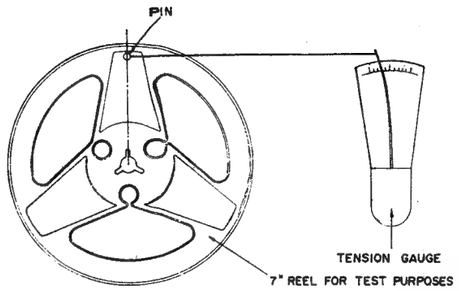


Figure 16

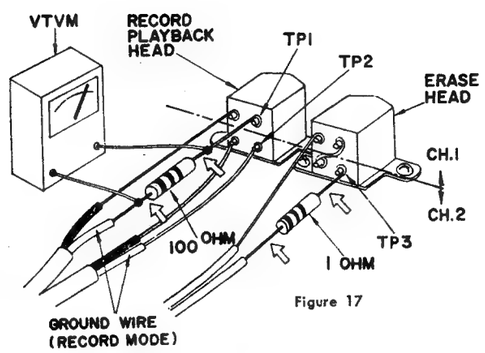


Figure 17

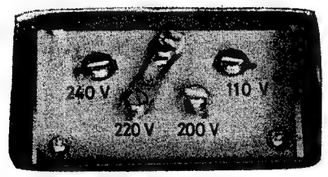


Figure 18

ERASE VOLTAGE (Refer to Figure 17)

1. Set the recorder in STEREO RECORDING mode.
2. Unsolder the ground wire connection at the ERASE HEAD (81) (On the schematic diagram, it is shown as TP3) and insert a 1 ohm resistor (1 W, 5%).
3. Connect an AC VTVM across the 1 ohm resisor.
   If the set is normal, the reading on the VTVM should be approximately 30 mV.

POWER SOURCE VOLTAGE CHANGING (110, 200, 220, 240V, 50/60 ⁒ Set Only)
(Refer to Figure 18 and 8)

1. Remove the Lid (172) (Power Source Voltage Changing Lid) on the Cabinet Bottom.
2. Set the power voltage changing tip on the proper terminal according to any convenient outlet.

POWER SOURCE CYCLES CHANGING (110, 200, 220, 240V, 50/60⁒ Set Only)

1. Replace the MOTOR PULLEY (32) (Refer to Fig. 13).
   For 60 cycles: Index No. 0, 1, 2, 3, 4
   For 50 cycles: Index No. 5, 6, 7, 8, 9
   Example: 60 cycles No. 2 corresponds to 50 cycles No. 7
   50 cycles No. 9 corresponds to 60 cycles No. 9
2. Change the lead wire connection of the MOTOR (178). (Refer to Schematic Diagram)
   For 60 ⁒, the yellow lead of the MOTOR (178) should be connected to 120 V tap of the POWER TRANSFORMER (T6).
   For 50 ⁒, the yellow lead of the MOTOR (178) should be connected to 110 V tap of the POWER TRANSFORMER (T6).

MAINTENANCE

CLEANING

The pinch roller, capstan, tape guides, record/playback head, erase head may accumulate tape oxide coating worn off the tape as it passes these parts. This accumulation will cause poor performance and should be removed with a soft lint-free cloth moistened with commercial head cleaner or alcohol.

LUBRICATION

Sliding bearing surface should be cleaned with a clean soft cloth and light grease applied. Rotating bearing such as pulley and motor bearings shoud be oiled sparingly with light non-detergent oil. Avoid excess lubrication.
Any excess oil or grease on pulleys, belts or capstan should be removed with a cloth moistened with alcohol.

DEMAGNETIZING THE HEADS

The heads may become magnetized by using an ohm-meter on them or their associated circuitry, or by a strong magnetic field near them such as a solder gun of speaker. Magnetized head will cause hiss or even partial erasure of tapes.
If heads should become magnetized, they can be demagnetized by use of a head demagnetizer. Move the demagnetizer slowly around both heads (Be careful not to scratch the brass surface that contacts the tape), and all parts in the tape path. Be sure to turn the magnetizer off only when it is away from the heads, as it may actually magnetize the heads. Also, keep the demagnetizer away from the recording tape.

TROUBLE CHART (MECHANISM)

SYMPTOM	CAUSE	REMEDY
Excessive wow	1. Dirty PINCH ROLLER (52) and/or CAPSTAN (121). 2. Improper pressure of TAPE PAD (102), PINCH ROLLER (52) and IDLER (56). 3. PINCH ROLLER (52) and IDLER (52) deformed. 4. Improper back tension.	1. Wipe with a soft cloth swab soaked in alcohol. 2. Adjust them for paper tension. 3. Replace PINCH ROLLER (52) and IDLER (56). 4. Replace REWIND RUBBER BELT (10), COUNTER BELT (15) or clean RUBBER BELT, COUNTER BELT, REWIND PULLEY (30), COUNTER PULLEY and their shaft.
Improper tape speed.	1. Insufficient PINCH ROLLER (52) pressure. 2. Dirt or oil on PINCH ROLLER (52), CAPSTAN (121), IDLER (56), MOTOR PULLEY (32) and FLY WHEEL (121).	1. Adjust or replace PINCH ROLLER TENSION SPRING (53). 2. Clean them using a soft clean cloth swab soaked in alcohol.
Improper brake action.	1. BRAKE PADS (2) (39) worn out. 2. BRAKE SPRING (4) aged.	1. Replace BRAKE PADS (2) and (39). 2. Replace BRAKE SPRINGS (4).
Improper operation of tape speed change.	1. IDLER SPRING (65) aged. 2. IDLER LEVER (59) operation is not smooth.	1. Replace SPRING (65). 2. Replace IDLER LEVER (59) or lubricate on IDLER LEVER SHAFT (58) after cleaning.
Improper take-up of tape in PLAYBACK mode.	1. TENSION ROLLER (34) not operating properly. 2. TENSION ROLLER (34) binding. 3. Defective TENSION ROLLER SPRING (37). 4. TAKE-UP REEL SPINDLE (35) does not rotate freely.	1. Lubricate and/or adjust TENSION ROLLER LEVER (38). 2. Repair or replace TENSION ROLLER (34). 3. Repair or replace TENSION ROLLER SPRING (37). 4. Clean and lubricare TAKE-UP REEL SPINDLE and SPINDLE SHAFT (35).
Improper operation in FAST FORWARD mode.	1. TENSION ROLLER (34) pressure is too weak. 2. TENSION ROLLER ACTUATING LEVER (44) not operating properly.	1. Adjust tension of FAST FORWARD LEVER SPRING (89). 2. Lubricate and/or adjust TENSION ROLLER ACTUATING LEVER SHAFT.
Improper operation in REWIND mode.	1. REWIND RUBBER BELT (10) broken. 2. REWIND BELT (10) and REWIND PULLEY (30) oily. 3. Slip mechanism in SUPPLY REEL SPINDLE (7) not operating properly.	1. Replace RUBBER BELT (10). 2. Clean BELT (10) and PULLEY (30) with soft cloth soaked in alcohol. 3. Adjust or replace SUPPLY REEL SPINDLE (7) slip mechanism.
Improper operation in PLAYBACK, FAST FORWARD and REWIND.	1. MOTOR PULLEY (32) loose on MOTOR (178) drive shaft.	1. Properly position MOTOR PULLEY (32) and tighten SET SCREWS (31).
TAPE COUNTER inoperative.	1. COUNTER BELT (15) broken or out of the COUNTER PULLEY groove.	1. Replace or set COUNTER BELT (15) properly.

TROUBLE CHART (AMPLIFIER)

SYMPTOM	CAUSE	REMEDY
Mechanism operating but no PLAYBACK or RECORD.	1. RECORD/PLAYBACK HEAD (82) defective. 2. Connecting leads to RECORD/PLAYBACK HEAD (82) open or shorted. 3. Defect in PRINTED CIRCUIT BOARD ASSEMBLY (227).	1. Replace RECORD/PLAYBACK HEAD (82). 2. Check and repair the leads. 3. Check and repair the electronic circuit.
PLAYBACK normal but will not RECORD.	1. Defective RECORD/PLAYBACK SWITCH (SW1, SW2). 2. Defective MICROPHONE and MIC or AUX. jack or connecting leads. 3. Defect in PRINTED CIRCUIT BOARD ASSEMBLY (227).	1. Repair or replace the switch. 2. Check and repair or replace. 3. Check and repair the electronic circuit.
Will not PLAYBACK.	1. Defective MUTING LEVER SWITCH (SW4). 2. Defective RECORD/PLAYBACK SWITCH (SW1, SW2). 3. Defective SPEAKER (SP1, SP2) or connecting leads.	1. Repair or replace the switch. 2. Check and replace the switch. 3. Repair or replace the speaker and its leads.
Sound quality poor in PLAYBACK mode.	1. RECORD/PLAYBACK HEAD (82) dirty. 2. RECORD/PLAYBACK HEAD (82) magnetized. 3. EQUALIZER LEVER SWITCH (SW5, SW6) defective. 4. Insufficient TAPE PAD (102) pressure. 5. Improper BIAS CURRENT applied to RECORD/PLAYBACK HEAD in RECORD mode. 6. Defective TAPE.	1. Clean the head with a soft cloth swab soaked in alcohol. 2. Use a head magnetizer. 3. Repair or replace the switch. 4. Adjust TAPE PAD BRACKET (106) position. 5. Adjust BIAS CURRENT. 6. Replace TAPE.
Recorded tape does not PLAYBACK properly on other recorder.	1. RECORD/PLAYBACK HEAD (82) not properly positioned.	1. Adjust RECORD/PLAYBACK HEAD (82) height or angle for proper position.
Poor ERASE or no ERASE.	1. ERASE HEAD (81) defective. 2. Connecting leads to ERASE HEAD (81) open or shorted. 3. Improper current applied to ERASE HEAD (81). 4. ERASE HEAD (81) improperly positioned. 5. Improper TAPE PAD (102) pressure.	1. Replace the head. 2. Check and repair the leads. 3. Check and adjust ERASE HEAD current. 4. Adjust ERASE HEAD position. 5. Adjust TAPE PAD BRACKET (106).
LEVEL METERS (M1) (M2) do not operate properly.	1. Defective LEVEL METER (M1) (M2) and METER RECTIFIER DIODE (D1) (D2). 2. VARIABLE RESISTOR (R96, R97) not properly adjusted.	1. Replace the meter and diode. 2. Check RECORD AMPLIFIER SENSITIVITY and adjust VARIABLE RESISTOR (R96, R97).

174
175
176
177
178

179

180

183, 184, 185, 181
26

27, L5
179, 182

180
183, 184, 185
26

186

27, L4, 181, 25
182, 24

190, 187, 173-1
188

189, 1, 32
191, 193, 172, 49

73, 31

1, 192, 49, 194, 171-1
109, 24, 230, 171-2
189, 70, 231, 49

129, 195, 130
119

19, 196, 203
199
36
49, 20, SW8

27, 198
197, PL3, 171-3
49
L2

128

127, 49
139, 202

128, 200
140

127, 135, T5

131, 27, 128, 137, 132

49, 127
201, 26, 27, 24

C61, C62
227, 49

49, T4, 127, 148
SW2, T2

SW1
49, T1, L1
T3

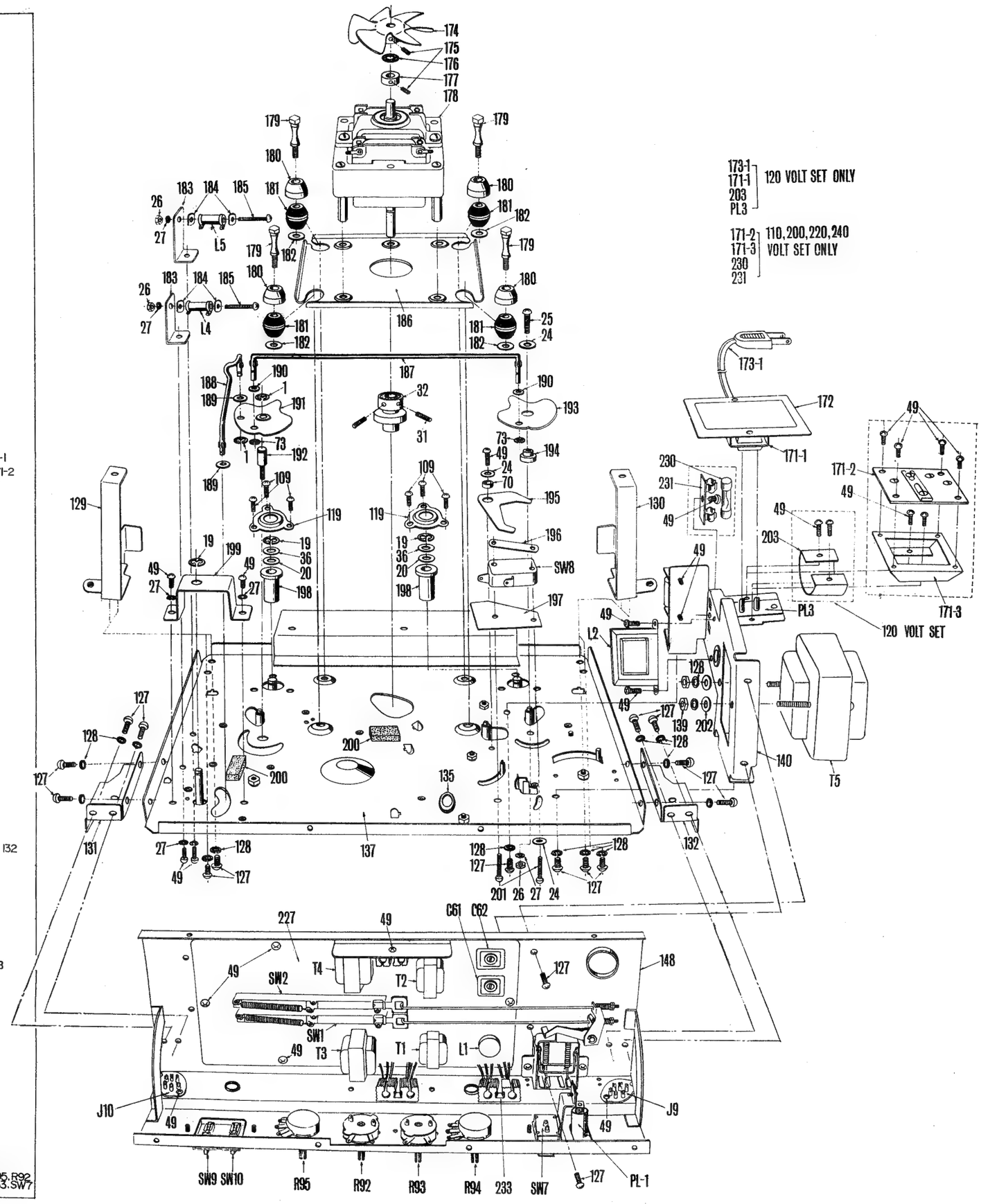
J9
J10
49

127, PL-1

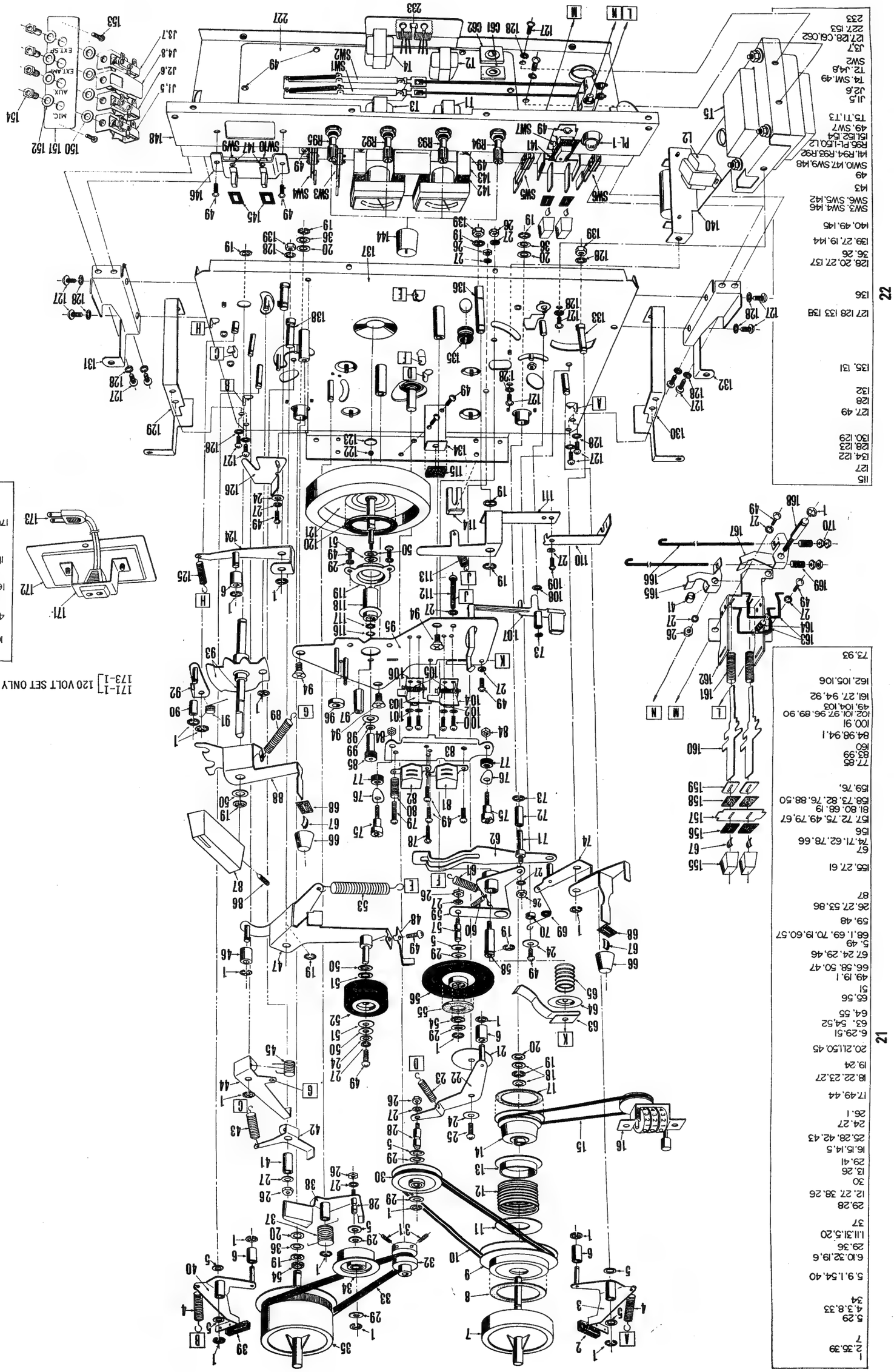
SW9, SW10, R95, R92
R93, R94, 233, SW7

173-1
171-1
203
PL3
120 VOLT SET ONLY

171-2
171-3
230
231
110, 200, 220, 240 VOLT SET ONLY



RD—711 MECHANISM EXPLODED BOTTOM VIEW



115
127
134, 122
128, 123
130, 129
127, 49
128
132
135, 131
136
127 128 133 138
128, 20, 27, 137
36, 26
139, 27, 19, 144
140, 49, 145
49
143
SW3, SW4, 146
SW6, SW5, 142
SW10, 147, SW9, 148
141, R94, R93, R92
R95, PL-1, SO1, 12
151, 152, 154
49, SW7
T5, T1, T3
12
15
J3,7
J1,5
J2,6
T4, SW1, 49
T2, J4,8
SW2
127, 128, C61, C62
227, 153
233

163, 26
164, 107, 95, 116
27, 94, 117
49, 41, 118, 1, 17, 165, 108
169, 112, 119, 6
166, 109, 19, 172
115, 125
29
110, 27, 50, 49
51, 120
167, 121, 124
170, 27, 114, 173
1, 49
168, 111, 24
19, 126

73, 93
162, 105, 106
161, 27, 94, 92
49, 104, 103
102, 101, 97, 96, 89, 90
100, 91
84, 98, 94, 1
77, 85
83, 99
160
159, 76,
158, 73, 82, 76, 88, 50
81, 80, 68, 19
157, 72, 75, 49, 79, 67
156
74, 71, 62, 78, 66
67
155, 27, 61
87
26, 27, 53, 86
59, 48
68, 1, 69, 70, 19, 60, 57
5, 49
67, 24, 29, 46
66, 58, 50, 47
49, 19, 1
65, 56
51
64, 55
63, 54, 52
6, 29, 51
20, 211, 50, 45
19, 24
18, 22, 23, 27
17, 49, 44
26, 1
24, 27
25, 28, 42, 43
16, 15, 14, 5
29, 41
13, 26
30
12, 27, 38, 26
29, 28
11, 31, 5, 20
37
6, 10, 32, 19, 6
29, 36
5, 9, 1, 54, 40
5, 29
4, 3, 8, 33
34
1
2, 35, 39
7

RESISTOR	75 76 3 4 73 1 2 74 / 83 84 21 5 6 22 23 24 7 13 10 9 14 8 / 53 54 11 15 20 17 31 29 27 26 91 92 12 19 16 18 32 30 25 93 28 98 / 35 33 34 36 94 95 / 41 37 40 39 38 42 / 43 44 / 47 46 51 50 45 48 49 52 / 96 97 57 58 / 67 59 62 65 64 71 70 81 60 68 63 66 69 72 / 55 56 / 79 81 78 80 77 82
CAPACITOR	59 60 / 1 2 5 6 3 4 / 41 39 40 42 7 8 / 13 9 18 11 15 21 14 17 10 12 16 22 / 19 20 / 25 26 27 28 29 30 / 49 50 / 33 34 35 31 36 32 37 38 / 45 43 44 46 23 24 47 48 / 57 / 58 / 55 54 53 / 56 / 61 / 51 / 62
MISCELLANEOUS	SP1 J3 J1 J6 J8 J4 J2 J5 J7 SP2 R.P.HEAD / J9 PL1 L4 L5 PL2 J10 / SW6 Q1 Q2 / SW5 / R92A Q3 Q4 R92B R93A R93B / R94 R95 / Q5 Q6 SW4 / M1 M2 / D1 D2 Q7 Q8 SW10 / SW1 T3 T4 SW2 Q10 Q9 Q11 Q12 / T1 T2 / SW9 / SW3 L2 / Q13 Q14 SR1 PL-1 L1 L3 T5 T6 MOTOR / SW8 SW11 PL3 E.HEAD / SW7 SW12

Q1, Q2
2SB-73B
1 ST AUDIO AMP.

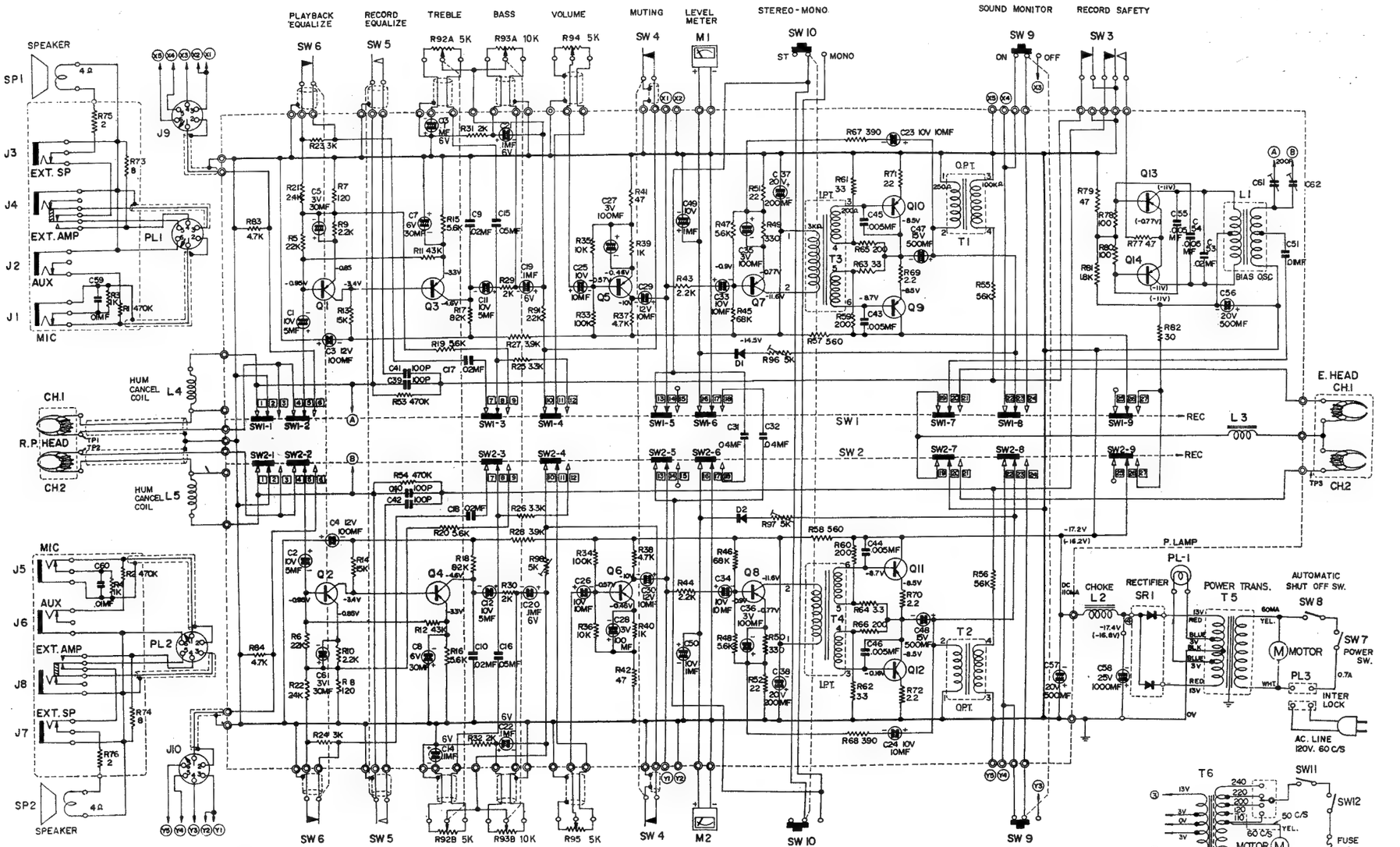
Q3, Q4
2SB-75C
2 ND AUDIO AMP.

Q5, Q6
2SB-75B
3 RD AUDIO AMP.

Q7, Q8
2SB-75B
AUDIO DRIVER.

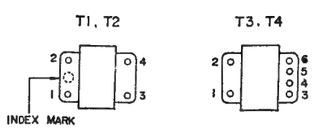
Q10, Q9, Q11, Q12
2SB-370B × 2
AUDIO OUTPUT.

Q13, Q14
2SB-156B ×2
BIAS OSCILLATION.



NOTES:

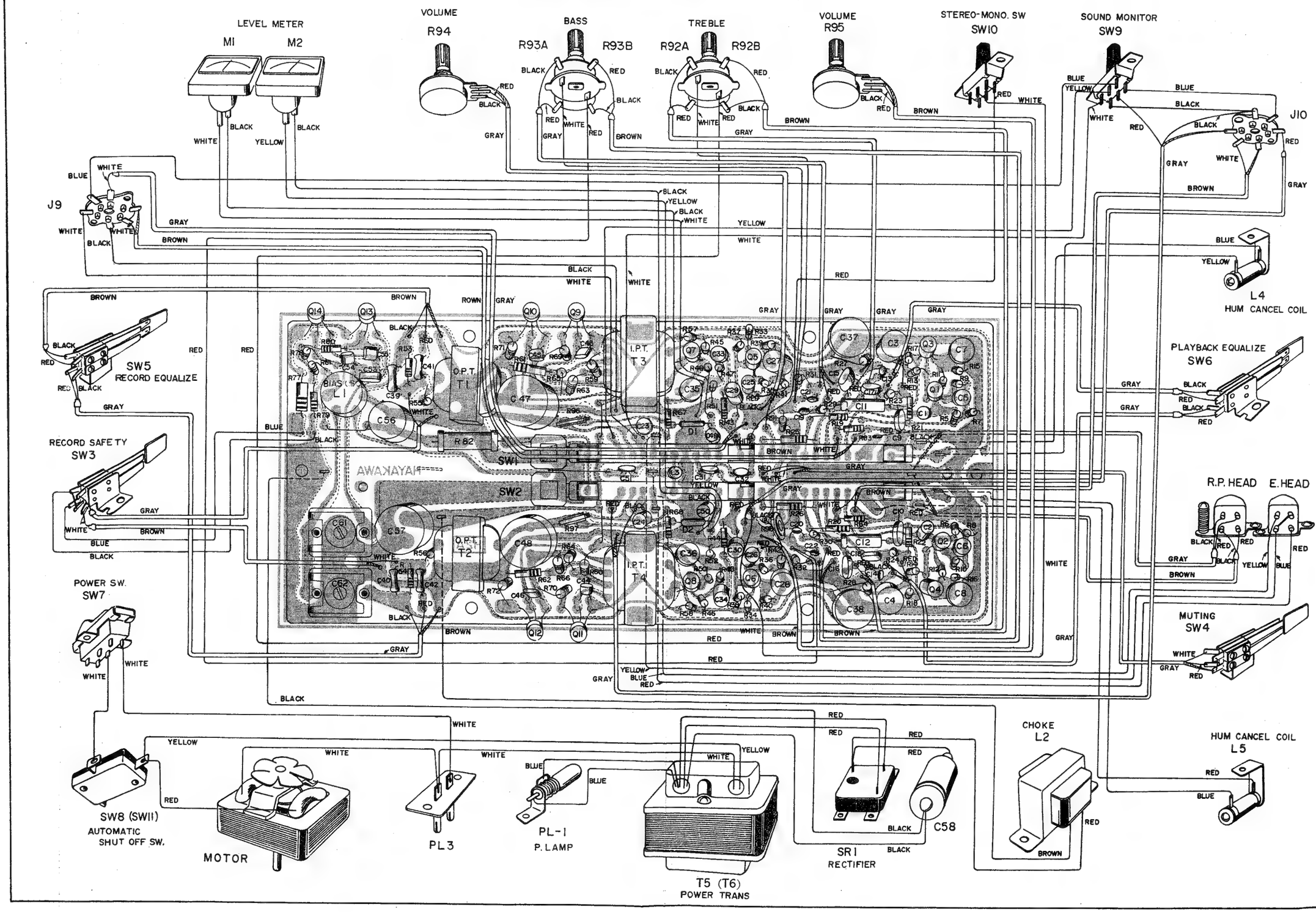
1. SW1.SW2 RECORD-PLAYBACK SWITCH. SHOWN IN PLAYBACK POSITION
2. SW3 RECORD SAFETY SWITCH. SHOWN IN STOP POSITION (FORWARD ON)
3. SW4 MUTING SWITCH. SHOWN IN STOP POSITION (FORWARD OFF)
4. SW5 RECORD EQUALIZING SWITCH. 7 1/2 i.p.s. OFF, 3 3/4 1 7/8 i.p.s. ON
5. SW6 PLAYBACK EQUALIZING SWITCH. 7 1/2 i.p.s. ON, 3 3/4 1 7/8 i.p.s. OFF
6. SW7 POWER SWITCH.
7. SW8 AUTOMATIC SHUT OFF SWITCH.
8. VOLTAGE: AT PLAYBACK. (VOLTAGE): AT RECORDING. NO SIGNAL.

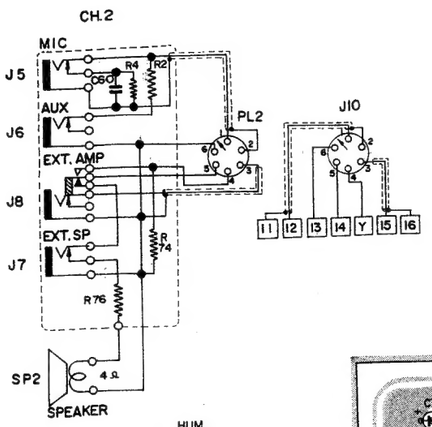


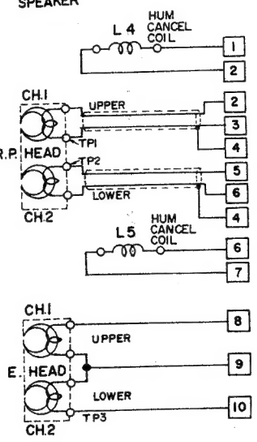
TERMINAL GUIDE (BOTTOM VIEW)

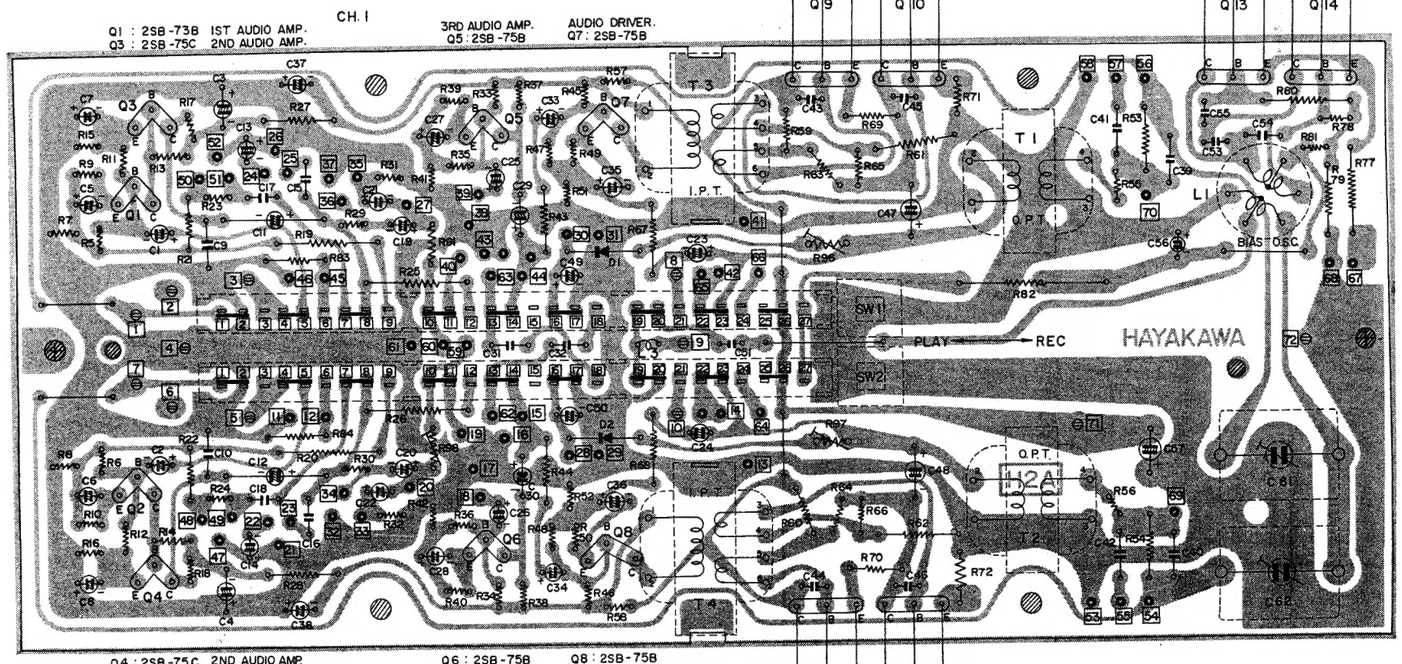
RD-711 SCHEMATIC DIAGRAM

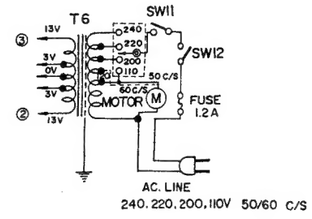
RD-711 WIRING CONNECTION DIAGRAM (TOP VIEW)

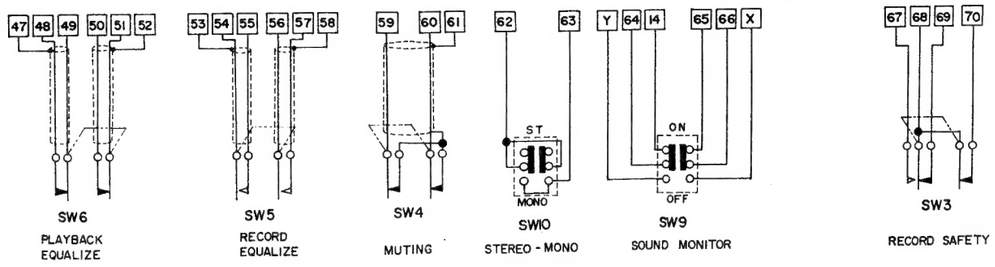


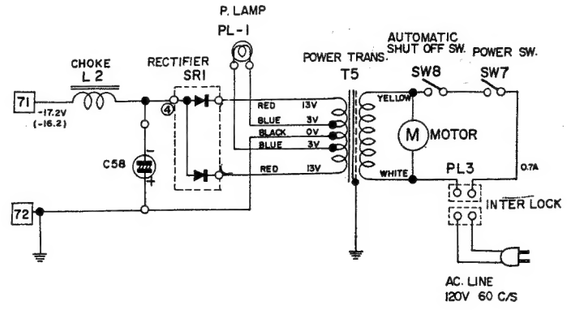












RD-711 PRINTED CIRCUIT BOARD (BOTTOM VIEW)

PARTS LIST

MECHANISM

REF. NO.	HEC PARTS NAME	DESCRIPTION
1	E-3	"E" Washer, 3ϕ
2	FELT-197	Brake Shoe, Supply Brake (Part of 3)
3	LEVER-271A	Arm, Supply Brake
4	SPR-271D	Spring (Left Brake to Chassis)
5	5.2W10-0.2	Washer, Fiber
6	ROLL-271A	Roller, Brake Arm
7	REEL-DAI-A	Reel Spindle, Supply
8	FELT-201	Felt Ring (Part of 9)
9	SLIP-WHEEL for #2271	Slip Pulley, Supply
10	BELT-271A	Belt, Rewind, Rubber
11	20W44.8-0.5	Spacer, Nylon
12	SPR-271N	Spring (Supply Spindle Shaft)
13	SPR-COVER	Spacer, Nylon
14	PULLY-271B	Counter Pulley, Supply
15	BELT for 1883	Belt, Counter, Rubber
16	COUNTER	Tape Counter
17		Felt Ring (Part of 14)
18	5.7W10-0.5	Washer, Fiber
19	E-4	"E" Washer, 4ϕ
20	5.7W10-0.2	Washer, Nylon
21	3.1W36-0.5	Washer, Fiber
22	LEVER-271C	Arm, Rewind
23	SPR-271U	Spring (Rewind Arm to Chassis)
24	3.2W10-0.5	Washer, Metal
25	3M+10S	Screw, 3ϕ×10 mm
26	3N	Nut, 3ϕ
27	3SW	Lock washer, 3ϕ
28	SHAFT271D	Shaft, Rewind Arm, Tension Roller Arm
29	5.1W10-0.2	Washer, Nylon
30	PULLY-271A	Pulley, Rewind
31		Set screw, Motor Pulley (Part of 32)
32		Motor Pulley (Part of 178)
33	BELT-271C	Belt, Take-up
34	T-ROLL	Tension Roller
35	REEL-DAI-B	Reel Spindle, Take-up
36	5.7W10-1.2	Washer, Fiber
37	SPR-271G or SPR-271V	Spring, Tension Roller Arm
38	LEVER-271D	Arm, Tension Roller
39	FELT-247	Brake Shoe, Take-up Brake, Part of 40
40	LEVER-271B	Arm, Take-up Brake
41	SLEEVE-B	Sleeve, Tension Roller Stopper Arm R/P Switch Actuating Arm
42	LEVER-271L	Arm, Tension Roller Stopper
43	SPR-271B	Spring, Tension Roller Stopper Arm
44	LEVER-271K	Lever, Tension Roller Actuating
45	SPR-271S	Spring, Tension Roller Actuaning Lever
46	ROLL-271B	Roller, Pinch Roller Arm
47	LEVER-271I	Arm, Pinch Roller
48	LEVER-271J	Lever, Take Pad Actuating
49	3M+6S	screw, 3ϕ×6 mm
50	6.2W13.5-0.2	Washer, Fiber
51	6.2W13.5-0.2	Washer, Nylon
52	PINCH-ROLL for #2271	Pinch Roller
53	SPR-271M	Spring, Pinch Roller Arm
54	FELT-193	Felt Ring, Idler Oil Cutting
55	FELT-189	Felt Ring, Idler Oil Cutting

REF. NO.	HEC PARTS NAME	DESCRIPTION
56	IDLER-271A	Idler Wheel
57	SHAFT-271E	Shaft, Idler Wheel
58	SHAFT-271F	Shaft, Idler Wheel Arm
59	LEVER-271G	Arm, Idler Wheel
60	SPR-271H	Spring, Idler Wheel Arm
61	SPR-271I	Spring, Idler Wheel Arm
62	LEVER-271E	Lever, Idler Wheel Arm Actuating
63	SPR-271T	Spring, Plate, Pressing 62
64	SPR-COVER for #2271	Spring Cap
65	SPR-271J	Spring, Idler Wheel Arm Actuating
66	8K-194	Button, Speed Selector
67	SPR-251B	Spring, Button
68	FELT-203	Felt, Speed Select & Fast Forward Lever
69	SPR-271K	Spring, Toggle
70	SPACER-271C	Sleeve, Metal
71	SHAFT-271H	Shaft, Idler Wheel Arm
72	ROLL-271D	Roller, Idler Wheel Arm
73	E-2	"E" Washer, 2ϕ
74	LEVER-271F	Lever, Speed Selector
75	TAPE-GUID for #2271	Guide, Tape
76	TAPE-SIJI	Lug, Tape Guide
77	GOMU-SPACER	Spacer, Rubber, Tape Guide
78	3M+8S	Screw, 3ϕ×8 mm
79	3M+12S	Screw, 3ϕ×12 mm
80	SPR-271Q	Spring, Head Adjusting
81	HEAD-271B	Head, Erase, 900 ohm IMP at 85 K c/s
82	HEAD-271A	Head, Record-Playback 2K ohm at 1000 c/s 95K ohm at 85K c/s
83	HEAD-DAI for #2271	Plate, Head Mounting
84	4TOK-N	Nut, 4ϕ, Tape Guide
85	CAP-SLEEVE for #2271	Sleeve, Capstan
86	4TOK-105	Screw, Function Knob Retaining
87	8K-192	Knob, Function Selector
88	CAM-PLATE-D	Lever, Fast Forward
89	SPR-271P	Spring, Fast Forward Lever
90	ROLL-271C	Roller, Fast Forward Lever Lock
91	SPR-271C	Spring, Fast Forward Lock Lever
92	LOCK-PLATE-B	Cam, Fast Forward Lever Detent
93	CAM-PLATE-A	Shaft & Cam, Function Selector
94	4S+6S	Screw, 4ϕ, Head Chassis Retaining
95	6SC-271	Head Chassis Assembly
96	6.2W13.5-3.2	Washer, Fiber
97	H-COV-STAY	Stud, Head Cover Supporting
98	5.2W10-1	Washer, Silicon Rubber
99	3W6-0.5	Washer, Nylon
100	2.6M+3S	Screw, 2.6ϕ×3 mm
101	2.6SW	Lock Washer, 2.6ϕ
102	FELT-195	Felt, Tape Pad (Part of 103, 104)
103	PAT-P-A	Tape Pad Plate, R/P Head, Tape Pad Ass'y
104	PAT-P-B	Tape Pad Plate, Eras Head, Tape Pad Ass'y
105	SPR-271R	Spring, Tape Pad Ass'y
106	PAT-P-DAI	Tape Pad Bracket, Tape Pad Ass'y
107	CUT-SW-ARM	Arm, Auto-Shut Off
108	3.2W7.9-0.3	Washer, Nylon

PARTS LIST

REF. NO.	HEC PARTS NAME	DESCRIPTION
109	3M+4S	Screw, 3ϕ×4 mm
110	B-PLATE	Lever, Record Lock
111	LEVER-271M	Arm, Record Lock
112	3M+30S	Screw, 3ϕ×30 mm
113	SPR-271L	Spring, Record Lock Arm
114	SPACER-251A	Spacer, Fiber
115	FELT-225	Felt (Part of 134)
116	OIL-SPRING	Spring, Capstan Bearing, (Part of 118)
117	MOLT-P-305	Polyurethane, (Part of 118)
118	METAL-271A	Bearing, Capstan
119	METAL-OSAE	Retainer, Bearing
120	FELT-191	Felt Flywheel (Part of 121)
121	FLY-WHEEL for #2271	Flywheel Ass'y
122	BALL for #2271	Ball, Bearing 2.5ϕ
123	PACKIN	Bearing Plate, Fiber, (Part of 137)
124	LOCK-PLATE-A	Lever, Function Detent Cam
125	SPR-271F	Spring, Function Detent Cam Lever
126	STOPER for #2271	Stopper, Pinch Roller Lever
127	4M+6S	Screw, 4ϕ×6 mm
128	4SW	Lock Washer, 4ϕ
129	CAB-ANG-B	Bracket, Reel Panel Retaining
130	CAB-ANG-A	Bracket, Reel Panel Retaining
131	CAB-ANG-D	Bracket, Chassis & Amp. Chassis Ass'y Retaining
132	CAB-ANG-C	Bracket, Chassis & Amp. Chassis Ass'y Retaining
133	LEVER-SHAFT B	Shaft, Speed Select Lever
134		Bracket, Reel Panel Supporting, (Part of 137)
135	ZETUEN-BUSH	Bushing Rubber
136	LEV-SHAFT A	Shaft, Record Lock Arm
137	6MC-271A	Chassis Ass'y
138	SHAFT-271A	Shaft, Pinch Roller Arm
139	4N	Nut, 4ϕ
140	PT-ANG-271	Bracket, Power Transformer Retaining
141	FELT-911C	Felt, Power Switch
142	MOLT-P-303	Meter Cushion, Polyurethane
143	M-ANG-271	Bracket, Meters Mounting
144	8K-193	Knob, Volume, Tone Controls
145	FELT-217	Felt, Sound Monitor, STEREO-MONO Change SW.
146	SW-ANG-271	Bracket, Slide Switch Mounting
147	2M+6S	Screw, 2ϕ×6mm
148	6MC-271B	Amp. Chassis Ass'y
150	SPACER 911A	Washer, Nylon, Jacks Spacer
151	J-PLATE 497	Jack Plate, Metal
152	SPACER 911B	Washer, Nylon, Jacks Spacer
153	4M+12S	Screw, 4ϕ×2mm
154	Part of Jacks	Nut, Jacks Retaining, Part of Jack
155	8K-195	Button, Record
156	FELT-223	Felt, Record Button
157	B-ANG-271B	Plate, Record Button
158	FELT-199	Felt, Record Button
159	B-STOPPER	Plate, Record Button Lever
160	LEVER-271N	Lever Record Button
161	B-SPRING	Spring, Record Button Lever

REF. NO.	HEC PARTS NAME	DESCRIPTION
162	B-ANG-271A	Bracket, Record Ass'y
163	ROD-271C	Rod, Record Lock
164	SPR-825-B	Spring, Record Lock Rod
165	LEVER-271P	Arm, R/P Switch Actuating
166	ROD-271D	Rod, R/P Switch Actuating
167	LEVER-271Q	Arm, R/P Switch Actuating
168	SHAFT-271I	Shaft, R/P Switch Actuating Arm
169	SWITCH-SPR	Spring, R/P Switch Actuating Rod
170	2N	Nut, 2ϕ
171-1	LOCK-ANGLE 120 Volt set only	Bracket, Interlock
171-2	T-919 110, 200, 220 240V set only	Voltage Changing Plate Bakelite
171-3	HAIDEN-P-A, 110, 200, 220, 240V set only	Bracket, Voltage Changing Plate Retaining
172	LOCK-BAN	Lid, Interlock,
173-1	ACC-245, 120V set only	Power Cord
174	Part of 178	Fun, Motor (Part of 178)
175	Part of 178	Screw, Fun Retaining (Part of 178)
176	Part of 178	Felt, Motor (Part of 178)
177	Patr of 178	Spacer, Motor Shaft (Part of 178)
178	MOTOR-271	Motor
179	4TOK-22	Shaft, Motor Cushion
180	C-UKE	Cap, Motor Cushion Rubber
181	CUSHION	Cushion Rubber, Motor
182	4.3W10-0.8	Washer, Metal
183	COIL-ANGLE	Bracket, Hum Cancel Coil Retaining
184	3.6W10-1.6	Washer, Bakelite
185	3M+30B	Screw, 3ϕ×30 mm
186	MOTOR-ANG	Motor Chassis
187	ROD-271A	Rod, Cam Connecting from 191 to 193
188	ROD-271B	Rod, Cam Connecting from 191 to 93
189	4.1W8-0.4	Washer, Fiber
190	3.1W6-0.4	Washer, Fiber
191	CAM-PLATE C	Cam, Brake Arm Actuating, Take-up
192	SHAFT-271C	Shaft, Brake Arm Actuating Cam
193	CAM-PLATE B	Cam, Brake Arm, Actuating, Supply
194	SPACER-271A	Sleeve, Brake Arm Actuating Cam
195	LEVER-271H	Lever, Idler Arm Actuating
196	CUT-SW-ANG	Plate, Auto-Shut-Off Switch
197	SPACER-271D	Spacer, Fiber
198	METAL-271B	Bearing, Reel Spindle
199	ANGLE-271A	Bracket, Function Shaft Retaining
200	MOLT-PLEN	Rod Cushion, Polyurethane
201	3M+20S	Screw, 3ϕ×20 mm
202	4W	Washer, Metal
203	LOCK-COVER 120V set only	Interlock Cover, Fiber
204	2CAB-497	Cabinet, Complate
205	TEN-FUTA	Cabinet Lid Complate
206	SYUNO-FUTA	Compartment Lid Ass'y
207	HANDL-288	Handle, Cabinet
208	HANDL-M288	Haudle Retaining Metal
209	LOCK (P-16)	Latch, Pair, Part of 240, 205
210	CHO-BAN497	Hinge, Pair, Part of 204, 205
213	GOMU LEG-449	Leg, Cabinet Bottom

PARTS LIST

REF. NO.	HEC PARTS NAME	DESCRIPTION
214-1	PANEL-271A 120V set only	Deck Cover, Plastic
214-2	PANEL-127A, 110, 200, 220, 240V set only	Deck Cover, Plastic
215	PANEL-461	Pannel, Reel Deck, Metal
216	CO-WAKU	Counter Window, Plastic
217	BAFFLE-497	Speaker Baffle Ass'y
218	3B+16S	Screw, Chromic, 3ϕ×16 mm Retaining Deck Cover
219	4MS+30S	Screw, Chromic, 4ϕ×30 mm Retaining Handle
220	3B+8S	Screw, Black, 3ϕ×8 mm, Retaining Reel Pannel
221	W3.1MS+25S	Screw for Wood, Black, 3.1ϕ×25 mm Retaining SP Baffle
222	3.2W9-2.0	Washer, Black Metal, Retaining SP Baffle
223	3MS+20S	Screw, Black, 3ϕ×20 mm Cabinet Bottom
224	REEL-CAP	Reel Cap
225	MIC-127	Microphone, Dynamic, 200 ohm, IMP.
226	MTT-7	Empty Reel, 7″
227	PCB-271	Printed Circuit Board
228	HEAD-COVER for #2495	Head Cover, Plastic
229	ATTACH-CORD #2495	Connecting Cord
230	110, 200, 220, 240V set only	Fuse, 1.2A
231	FH-102, 110, 200, 220, 240V set only	Fuse Socket
232	MTU-7A	Reel and Law Tape, 7″
233	RADIATOR for #2495	Radiator, Transistor

SPEAKERS, METERS, PILOT LAMPS, PLUGS

S P1, S P2	Speaker, 7 1/2″×4″, 4 ohm, PM (1910H-25A)
M1, M2	Level VU Meter
P L-1	Pilot lamp, AC 6.3 V, 0.2 A (PL-504)
P L1, P L2	Connector Plug (PG-144)
P L3	Interlock Plug (PG-194) (120V Set Only)

JACKS

J 1, J 5	Microphone Jack (J-903)
J 2, J 6	Auxiliary Jack (J-903)
J 3, J 7	External Speaker Jack (J-935)
J 4, J 8	External Amplifier Jack (J-921)
J 9, J 10	Connector Socket (SO-139)

TRANSISTORS

Q1, Q2	2SB-73B	1st Audio Amplifier
Q3, Q4	2SB-75C	2nd Audio Amplifier
Q5, Q6	2SB-75B	3rd Audio Amplifier
Q7, Q8	2SB-75B	Audio Driver
Q9, Q10	2SB-370B	Matched Pair, Output
Q11, Q12	2SB-370B	Matched Pair, Output
Q13, Q14	2SB-156B	Matched Pair, Oscillation

REF. NO.	DESCRIPTION

DIODE, RECTIFIER

D1, D2	Meter Rectifier	(1N-34A)
SR1	Rectifier	(S1-RECT-25)

TRANSFORMERS

T1, T2	Output Transformer	(74-461)
T3, T4	Driver Transformer	(6T-410)
T5	Power Transformer	(5T-497), 120V Set
T6	Power Transformer	(5T-499), 240, 220, 200, 110V Set

COILS

L1	Oscillation Coil	(4L-329 or 4L-332)
L2	Choke Coil	(9T-429)
L3	Dummy Load Coil	(4L-929)
L4, L5	Hum Cancel Coil	(4L-938)

SWITCHES

SW1, SW2	Record/Playback Switch, Slide	(4S-81)
SW3	Record Safety Switch, Lever	(8S-13)
SW4	Muting Switch, Lever	(8S-15)
SW5	Record Equalizer Switch, Lever	(8S-17)
SW6	Playback Equalizer Switch, Lever	(8S-19)
SW7	Power Switch, Toggle (120V, Set)	(8S-35)
SW8	Micro Switch, Auto Shut-Off (120V, Set)	(8S-43)
SW9	Sound Monitor Switch, Slide	(4S-34)
SW10	Stereo-Mono Selector Switch, Slide	(4S-34)
SW11	Micro Switch, Auto Shut-Off (240, 220, 200, 110V Set)	(9S-75)
SW12	Power Switch, Toggle (240, 220, 200, 110V Set)	(9S-87)

CAPACITORS

C_1, C_2	5 μF 10V,	+150∼−10%,	Electrolytic
C_3, C_4	100 μF 12V,	+150∼−10%,	Electrolytic
C_5, C_6	30 μF 3V,	+150∼−10%,	Electrolytic
C_7, C_8	30 μF 6V,	+150∼−10%,	Electrolytic
C_9, C_{10}, C_{17}, C_{18}, C_{53}	.02 μF 50V,	±20%,	Mylar
C_{11}, C_{12}	5 μF 10V,	+150∼−10%,	Electrolytic
C_{13}, C_{14}, C_{19}, C_{20}, C_{21}, C_{22}	.1 μF 6V,	±20%,	Aluminized
C_{15}, C_{16}	.05 μF 50V,	±20%,	Mylar
C_{23}, C_{24}, C_{25}, C_{26}, C_{33}, C_{34}	10μ 10V,	+150∼−10%,	Electrolytic
C_{29}, C_{30}	10μF 12V,	+150∼−10%,	Electrolytic
C_{27}, C_{28}, C_{35}, C_{36}	100μF 3V,	+150∼−10%,	Electrolytic
C_{31}, C_{32}	.04 μF 50V,	±20%,	Mylar
C_{37}, C_{38}	200 μF 20V,	+200∼−10%,	Electrolytic
C_{39}, C_{40}, C_{41}, C_{42}	100 PF 50V,	±5%,	Titanium
C_{43}, C_{44}, C_{45}, C_{46}, C_{54}, C_{55}	.005 μF 50V,	±20%,	Mylar
C_{47}, C_{48}	500 μF 15V,	+200∼−10%,	Electrolytic
C_{49}, C_{50}	1 μF 10V,	+150∼−10%,	Electrolytic
C_{51}, C_{59}, C_{60}	.01 μF 50V,	±20%,	Mylar
C_{56}, C_{57}	500 μF 20V,	+200∼−10%,	Electrolytic
C_{58}	1000 μF 25V,	+200∼−10%,	Electrolytic
C_{61}, C_{62}	200 μF Trimmer, Bias Adjust		

PARTS LIST

REF. NO.	DESCRIPTION

CONTROLS AND RESISTORS

R_3, R_4, R_{39}, R_{40}	1 KΩ	1/4W,	±10%,	Carbon
R_1, R_2	470 KΩ	1/4W,	±10%,	Carbon
R_5, R_6	22 KΩ	1/4W,	±5%,	Carbon
R_7, R_8	120 Ω	1/4W,	±10%,	Carbon
R_9, R_{10}, R_{43}, R_{44}, R_{91}	2.2 KΩ	1/4W,	±10%,	Carbon
R_{11}, R_{12}	43 KΩ	1/4W,	±5%,	Carbon
R_{13}, R_{14}	15 KΩ	1/4W,	±10%,	Carbon
R_{15}, R_{16}, R_{19}, R_{20}, R_{47}, R_{48}	5.6 KΩ	1/4W,	±10%,	Carbon
R_{17}, R_{18}	8.2 KΩ	1/4W,	±10%,	Carbon
R_{21}, R_{22}	2.4 KΩ	1/4W,	±5%,	Carbon
R_{23}, R_{24}	3 KΩ	1/4W,	±5%,	Carbon
R_{25}, R_{26}	3.3 KΩ	1/4W,	±10%,	Carbon
R_{27}, R_{28}	3.9 KΩ	1/4W,	±10%,	Carbon
R_{29}, R_{30}, R_{31}, R_{32}	2 KΩ	1/4W,	±5%,	Carbon
R_{33}, R_{34}	100 KΩ	1/4W,	±10%,	Carbon
R_{35}, R_{36}	10 KΩ	1/4W,	±10%,	Carbon
R_{37}, R_{38}, R_{83}, R_{84}	4.7 KΩ	1/4W,	±10%,	Carbon
R_{41}, R_{42}, R_{79}	47 Ω	1/4W,	±10%,	Carbon
R_{45}, R_{46}	68 KΩ	1/4W,	±10%,	Carbon
R_{49}, R_{50}	330 Ω	1/4W,	±10%,	Carbon
R_{51}, R_{52}	22 Ω	1/4W,	±10%,	Carbon
R_{53}, R_{54}	470 KΩ	1/4W,	±5%,	Carbon
R_{55}, R_{56}	56 KΩ	1/4W,	±10%,	Carbon
R_{57}, R_{58}	560 Ω	1/4W,	±10%,	Carbon
R_{59}, R_{60}, R_{65}, R_{66}	200 Ω	1/2W,	±5%,	Carbon
R_{61}, R_{62}, R_{63}, R_{64}	3.3 Ω	1/2W,	±5%,	Carbon
R_{67}, R_{68}	390 Ω	1/4W,	±10%,	Carbon
R_{69}, R_{70}, R_{71}, R_{72}	2.2 Ω	1/2W,	±5%,	Carbon
R_{73}, R_{74}	8 Ω	2W,	±10%,	Resin
R_{75}, R_{76}	2 Ω	1W,	±10%,	Resin
R_{77}	4.7 Ω	1/2W,	±10%,	Carbon
R_{78}, R_{80}	100 Ω	1/4W,	±10%,	Carbon
R_{81}	1.8 KΩ	1/4W,	±10%,	Carbon
R_{82}	30 Ω	2W,	±10%,	Resin
R_{92} A, B	5 KΩ Tone Control, Treble, Dual (8V-568)			
R_{93} A, B	10 KΩ Tone Control, Bass, Dual (8V-577)			
R_{94}, R_{95}	5 KΩ Volume Control (8V-569)			
R_{96}, R_{97}, R_{98}	5 KΩ Sensitivity Adjust (8V-554)			

Printed in Japan